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EFNEP DATA ANALYSIS PLAN



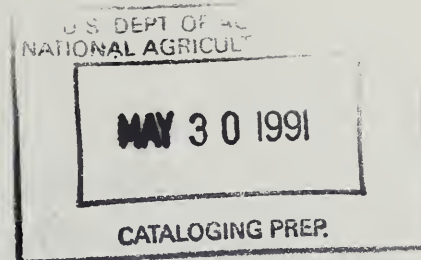
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EFNEP DATA ANALYSIS PLAN

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Submitted to:

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Pursuant to:

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referred to FES.

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PURPOSE

The general purpose of this document is to present in some detail the plans and objectives of Synectics Corporation regarding longitudinal and cross-sectional analysis of data periodically collected on the Expanded Food and Nutrition Education Program (EFNEP). Within this global objective, two more specific objectives are particularly relevant:

1. To provide a mechanism for communicating to relevant Federal Extension Service (FES) and other Government personnel the rationales for, substantive analytic targets of, and detailed methods for analysis of EFNEP Unit and Sample Data.
2. To provide Synectics' project staff with a convenient checklist of coordinated analytic and substantive objectives, and procedures for analysis of EFNEP Unit and Sample Data.

BACKGROUND

The Expanded Food and Nutrition Education Program was initiated in 1969, with a commitment to improving the nutritional knowledge and practices of low-income families. Since its inception, EFNEP has expanded its purview, and is now operating in all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. With the primary working contacts being made by paid paraprofessional program aides, homemakers are exposed to materials and discussions on issues such as: nutritional value of foods; the basic four food groups; food preparation; food preservation and storage; sanitation practices; food buying practices; and other nutrition--and food related topics. Direct face-to-face aide/homemaker contacts are supplemented via written and pictorial materials intended to assist the homemaker in implementing nutritional and nutrition-related practices discussed with EFNEP aides.

Any ambitious social program must justify its continued existence, and EFNEP is no exception. Recognizing this responsibility, EFNEP administration included a strong evaluation component from the outset, and have continued to include ad hoc assessment of EFNEP activities throughout the life of the Program. Ongoing evaluation is supported by periodic (yearly) composite reports from all EFNEP units, as well as semiannual surveys of 168 sample units selected to be representative of the entire set of EFNEP units. The sample data, in addition to providing general program status information (number of families, numbers of aides; persons in program families), also includes a variety of data relating to evaluation of EFNEP program targeting and success in altering client population food behaviors. Data are aggregated in unit, state, and national groupings to permit comparisons among various clusters of Program elements as well as monitoring of overall program status.

The data and analyses as routinely monitored by EFNEP are valuable and necessary evaluative components of the program. This information is, of course, absolutely necessary for maintenance of awareness of overall EFNEP status and thrust. It is also necessary for evaluating the effects of implementing executive program orders, the impact of severe societal upheavals (recessions, rampant inflation, etc.), and generally monitoring EFNEP operations. It is significant, however, that information which EFNEP routinely collects can be used in a variety of more complex analysis which have the potential for providing even more detailed examinations of Program characteristics. The current EFNEP data analyses do not, for example, permit examination of stratified groupings of units, a process which would permit comparison and tracking of selected EFNEP characteristics and the joint relationship of important program variables.

*What is at
this point*

ANALYTIC OBJECTIVES

The global objective of this effort is to examine current and incoming EFNEP unit and sample data to provide more fine-grained insight into progress, potential, and problems of EFNEP. Subordinate and/or related to this overriding goal are a variety of other objectives, including:

- ✓ Identification of kinds of analyses which will more clearly indicate substantive EFNEP progress (or lack thereof).
- ✓ Identification of kinds of analyses which can serve as a basis for periodic, ongoing monitoring of EFNEP activities.
- ✓ Investigation of specific EFNEP-related issues of current and ongoing interest to EFNEP management.
- ✓ Identification of likely candidates for more detailed, ad hoc analyses to be conducted by FES, ERS, or Government contractors in the future.
- ✓ Identification of analyses which will support EFNEP management decision-making about important program modes of operation.
- ✓ Identification of analyses which will facilitate review and retrospection of the life of EFNEP.
- ✓ Identification of EFNEP data base data elements and related analyses which might be combined and/or eliminated so as to streamline monitoring and data processing activities.

CHARACTERISTICS OF THE CURRENT EFFORT

Before proceeding further in an examination of the procedures to be employed in the analysis of existing and incoming EFNEP data, it will be useful to examine in some detail the general analytic problem to be addressed in this effort. In general, behavioral and social research involving quantitative data can be divided into two general categories: ex post facto (historical; descriptive) research; and experimental research. It is important to recognize that this current project involves ex post facto research, and thus must proceed with attention to the limitations and constraints imposed by the very nature of such analyses.

The most cogent operational distinction between experimental and ex post facto research involves the concept of control. In experimental research, the researcher has at least manipulative control: he or she can directly manipulate the levels of one or more important variables. In a true experimental setting, moreover, the researcher has the further advantage of statistical control by randomization. Individuals or groups may be assigned to experimental and control settings, with treatments and control procedures being implemented according to a rigorously defined and rigidly scheduled experimental design.

The underlying objective for the concern of researchers about the nature and extent of control in research studies is the assurance that the changes observed in dependent (criterion; target) variables are due to the effects of the independent (experimental) variables, rather than to some factor which had not been accounted for in the research design. The goal of experimental research, then is to achieve a situation of *ceteris paribus*--"all other things being equal"--in the research setting; with *ceteris paribus* achieved, the researcher can be assured that he/she is observing a clear and unequivocal set of relationships among the set of variables being examined. In the words of Simon (1969):¹

One of the outstanding characteristics of the social sciences is that the subject matter is not static, not fixed, not immutable. In physics or chemistry, you can usually be confident that what happens today will also happen tomorrow, and that what happens in the East will happen in the West, and that what happens to the context of one test tube will happen again to those of the next test tube. The chemist or physicist seldom needs to worry that his sample of matter jumped into his hand to be studied just because it is different from other samples of matter. But just exactly these things occur in social science studies all the time. All such occurrences are "departures from" a "breaches of" *ceteris paribus*. All of them are conditions that the social scientist must overcome in order to "hold everything else constant."

¹Simon, J. L. *Basic research methods in social science*. New York: Random House, 1969.

As might naturally be suspected, maintenance of *ceteris paribus* is far from easy in experimental studies; it is conceptually impossible in *ex post facto* research. Because the data are collected without the direct control of the experimenter, no opportunity for control of the contexts in which the data are collected exists.

From the foregoing discussions, one might infer that *ex post facto* research is so inferior to experimental research as to make it worthless. Actually, few practicing social researchers would adhere to this extreme position. True, the results of true experimentation can be used to form a more powerful case about a given situation than would be the case with results of *ex post facto* studies, but the very nature of social research often argues against the employment of elegant experimental designs. As Kerlinger (1964)² has argued:

Despite its weaknesses, much *ex post facto* research must be done in psychology, sociology, and education simply because many research problems in the social sciences and education do not lend themselves to experimental inquiry. A little reflection on some of the important variables in educational research--intelligence, aptitude, home background, parental upbringing, teacher personality, school atmosphere--will show that they are not manipulable. Controlled inquiry is possible, of course, but true experimentation is not. Sociological problems of education, such as the extreme deviation in group behavior and its effect on educational achievement, and board of education decisions and their effects on teacher and administrator performance and morale, are mostly *ex post facto* in nature. Even if we would avoid *ex post facto* research, we cannot.

It can even be said that *ex post facto* research is more important than experimental research. This is, of course, not a methodological observation. It means, rather, that the most important scientific and educational research problems do not lend themselves to experimentation, although many of them do lend themselves to controlled inquiry of the *ex post facto* kind.... If a tally of sound and important studies in psychology, and education were made, it is likely that *ex post facto* studies would outnumber and outrank experimental studies.

The length and complexity of this discussion on the nature of scientific inquiry is neither accidental nor inappropriate to the objectives of this analysis plan. The fact that we are engaged in *ex post facto* research has at least three important implications for the research team, FES personnel monitoring the effort, and Government administrators who will use the results of this study:

²Kerlinger, F. N. *Foundations of behavioral research*. New York: Holt, Rinehart and Winston, Inc., 1964.

1. The sophistication of the statistical manipulations performed on the data will be somewhat limited by the nature of the data which can be obtained. The research team must be careful to avoid analytic overexhuberance which could drain valuable project resources without adding materially to the benefits of the project.
2. Interpretation of the results of ex post facto studies must always be guided by the nature of the data which the study employs. Where strong statistical relationships emerge, or where trends seem vivid and unequivocal, there is sometimes an understandable tendency on the part of the interpreter of the results to "go beyond the data" by inferring causal relationships and generalizing results to substantially different contexts. Often, the nature of true relationships in the phenomena under investigation are such that these interpretation will actually be valid (i.e., even the most carefully controlled and rigorously applied experimental study would support conclusions which might be derived from the ex post facto research). It is important to bear in mind, however, that overextended interpretations of the results of ex post facto studies may be open to valid methodological criticisms, particularly by those who have perspectives significantly different from those who commissioned and/or performed the research.
3. The multiplicity of factors which can influence observations in ex post facto studies argues strongly for extremely close coordination between the research team and persons intimately familiar with the evolution of the program being investigated. This practice is necessary to minimize the confusion, following of false trails, and inappropriately committed effort which may be caused by:
 - a. Attempting to explain or find causes for peculiarities in the data which may be mere artifacts of changes in the administrative structure of the program under investigation.
 - b. Failure to concentrate on the most liekly set of variables in the analysis. This set may be obvious to a program administrator and/or monitor because of his/her close association with the day-to-day activities of the program. It may not be so obvious to someone with less intimate contact.

In the current effort, then, close and continuing coordination among members of the Synectics' research team and FES monitoring and administrative personnel will be necessary to assure that such inefficiencies can be avoided.

STAGES OF ANALYSIS

Completion of the EFNEP data analysis will require completion of at least six separate stages of analysis:

1. Identification of Appropriate Data Sets.
2. Identification of Appropriate Data Analyses.
3. Data Reduction and Encoding.
4. Statistical Analysis.
5. Interpretation of Analytic Results.
6. Reporting and Briefing.

These stages are discussed in detail below.

Identification of Appropriate Data Sets

The two most important data sets which will be subjected to analysis in this effort are, of course, those consisting of unit and sample data for the years 1969 through 1978. Most of the variables to be used in this project will be derived from these bodies of information. At least two further considerations in the selection of data are, however, relevant:

1. It is anticipated that the set of EFNEP data to be used in the analyses will consist of a subset of the entire amount of unit and sample data available. This strategy will be necessitated for two reasons:
 - a. It is possible that not all of the variables contained in the unit and sample data bases will be required to address the kinds of analytic objectives which will evolve throughout the course of the effort. Variables which add nothing substantial to answering the questions which may be of interest to EFNEP management will, of course, not be included in the analytic data sample.
 - b. For initial analyses intended to define the range of inter-item associations and trends which are likely to be of interest to EFNEP management, it will be expedient to limit the number of observations of data to less than the total amount than could be supported by the existing and incoming EFNEP data. With this

strategy in mind, two methods of limiting the number of observations seem most appropriate: (1) sampling of the unit data to reduce the amount of data which need be reduced and encoded; and, (2) selecting alternating data reporting periods for analysis, or sampling from among the available reporting periods to limit the number of observations necessary for execution of longitudinal analyses.

It is expected that these procedures will enable the research staff to identify and isolate those types of analyses from which the most important results are likely to be obtained in an initial look at the data. Project resources may thus be conserved for more in-depth examinations of issues of highest EFNEP priority.

2. It is likely that the inclusion of externally held and/or developed data sets will add greatly to the power and utility of the types of analyses to be implemented in this effort. In considering the extent to which EFNEP has focused its efforts on an appropriate target population, for instance, a wide variety of demographic data available from the United States Bureau of the Census, the Labor Department, and the Department of Commerce may be quite useful. Such data could enable the research staff to investigate issues such as the likelihood that the ethnic distribution of program families in individual program units is truly representative of the low-income populations of the geographic areas in which those units are operating. Implementation of this sort of analysis over time would permit an examination of the extent to which EFNEP client population targeting has been getting better or worse over the life of the program. Analogously, information on the income distribution within counties would permit an investigation of the extent to which targeting with respect to existing income levels at individual program units has become better or worse. Synectics will endeavor to keep the utilization of such types of data to a minimum, since it is recognized that the collection and employment of these kinds of data may well fall beyond the purview of EFNEP and FES operations. Where they can contribute materially to the useful examination of issues of considerable priority, however, it is our feeling that their inclusion in the data set should at least be considered.

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Identification of Appropriate Data Analyses

Identification of appropriate data analyses will involve specification of the exact variables, sets of reporting periods, and statistical techniques to be employed for actual examination of available data. Preliminary discussions with FES personnel have resulted in specification of a number of issues of considerable interest to EFNEP management; investigatory data analyses and in-depth examination of the available data have led to the identification of several other candidates. Once these issues have been defined, the research team can select what seems on methodological and data characteristic grounds to be the most valuable types of statistical routines, data aggregation strategies, and data subset inclusions. A candidate set of such issues, and the analyses which seem most appropriate to them, are included later in this plan.

It is crucial to the success of this effort that the plans for the data analyses be carefully scrutinized by knowledgeable FES staff, since an in-depth awareness of the ways in which EFNEP has evolved, critical milestones in EFNEP history, and the day-to-day operations of EFNEP may have significant bearing on the value and utility of particular analyses to EFNEP management.

Data Reduction and Encoding

Once actual analyses have been specified and approved by EFNEP management, data can be prepared for actual statistical analysis. Two methods will be employed:

1. Manual transfer of data elements from EFNEP program print-outs to data reduction sheets, and subsequent digitization of the data in preparation for automated analysis.
2. Selection of data from previously digitized unit and sample data provided to Synectics on 9-track digital tapes.

Statistical Analysis

Data will be analyzed using statistical techniques agreed upon by EFNEP program management and the Synectics' project staff. Specific techniques to be employed for individual investigations of EFNEP operations are suggested in the "Candidate Data Analyses" section of this Plan.

Interpretation of Analytic Results

Interpretation of the results of the analyses will again be a process requiring a considerable amount of interaction between the Synectics' project team and EFNEP program management personnel. With even the most careful analysis of the range of outcomes of specific investigations, it is possible that the expertise of personnel intimately familiar with EFNEP operations will be required to verify that the outcomes of the analyses really indicate what they seem to indicate. In particular, the insights of EES personnel will be invaluable in suggesting and prioritizing possible reasons for the results obtained in terms appropriate to communication to higher levels of program management.

Reporting and Briefing

Results of the analyses, and interpretations thereof, will be communicated to EFNEP management in two ways:

1. Written summarizations of the outcomes of the research, including:
 - a. Sources of information.
 - b. Types of statistical analysis.
 - c. Raw results of the analyses.
 - d. Graphical representations of the analytic results.
 - e. Interpretations of the results in terms tailored to the interests of EFNEP management.
 - f. Suggestions and recommendations for more detailed analyses which are beyond the scope of the current effort.
 - g. Alternative explanations for the form of the analytical results where there is reasonable doubt as to the factors impacting on criterion variables of interest.
 - h. Detailed instructions for replication and/or reapplication of the analyses on incoming EFNEP data.
2. Briefings, which will be essentially executive summarizations of the written reports described above.

CANDIDATE ANALYTIC ISSUES

The following set of analytic issues represents an intersect of the EFNEP Program management desires for information about the history and status of the Program and Synectics' judgments concerning the capability of available data to support quantitative analyses pertaining thereto.

1. Extent of change in EFNEP performance in effecting positive changes in target population nutrition behaviors.
2. Length of time required for given amounts of change in target population nutrition behaviors to occur.
3. Identification of factors correlated with changes in nutritional behaviors.
 - a. Homemaker personal characteristics.
 - b. Aide personal characteristics.
 - c. Volunteer personal characteristics.
 - d. Program characteristics.
4. Relationship of food expenditures to nutritional behaviors.
5. Extent to which EFNEP is succeeding or failing to work with an appropriate target population as defined by:
 - a. Racial/ethnic characteristics.
 - b. Income level.
 - c. Family size (with particular emphasis on families with young children).
 - d. Rural versus urban concentration.
6. Extent to which the ratio of program families to nonprogram families has changed.
7. Costs of the program per family.
8. Differences in the relative effectiveness of group and individual styles of aide/client interaction.
9. Reasons for high aide turnover.
10. Differences in family and other characteristics between food stamp and nonfood stamp recipients.

CANDIDATE DATA ANALYSES

This section presents Synectics' current view of the set of analyses most appropriate to provide information relating to the analytic issues discussed previously in this Plan. The discussion of each analysis is organized in the following manner:

- I. Criterion Variables, or those variables which would be the target of the analyses. In attempting to define correlates of high turnover among aides, for example, the most appropriate criterion variable will be the percentage of aides who left a given unit during the reporting period.
- II. Independent Variables, or those variables which may have some effect on the criterion variable(s) under examination. In the examination of the reasons for high aide turnover, for example, a measure of difference in aide background from that of homemaker background might be appropriate.
- III. Statistical Procedures, or the mathematical procedures which would be used to manipulate the data to ascertain the effects of the independent variables on the criterion.

Comments concerning data quality, the probability of finding significant relationships between criterion and independent variables, etc. will be inserted into the discussions where appropriate.

In addition to the specific discussions of analytic issues which follow, there are several observations which are generally relevant to the current analysis of EFNEP data which ought to be touched on here. Each point relates to more than one of the specific discussion topics presented below, and their presence here will forestall some redundancy which might otherwise unnecessarily lengthen the descriptions of issue-specific analytic strategies.

1. One of the most important sets of potential criterion variables (that dealing with nutritional behavior of program families) is reported in the Sample Unit dataset at various time intervals defined by the number of the food record on which food recall data were collected. This method of reporting has an unfortunate, albeit unavoidable, impact on many of the analyses. It necessitates looking across report periods for associations with potential independent variables. For a third food recall, for instance, it is difficult to ascertain in any a priori fashion whether relationships with independent variables will appear most strongly when the independent variable is measured at the same reporting period, or at some previous time. For this reason, when criterion variables are associated with food records, correlations will be run on both temporally coincident and lagged independent variables. This strategy will, of course, necessitate processing of more data than would otherwise be necessary.

2. Because data are aggregated by Unit, it will be impossible to track the progress of individual homemakers over the course of time. This leads to some conceptual difficulty in assessing the impact homemaker characteristics on other program variables (and vice versa), since the composition of the set of active program families will be constantly changing. For large aggregates of units, one can make the probably justifiable assumption that the differences will average out. For smaller aggregations, however, the effects may lead to some unwanted variability in analytic results where actual strong relationships do indeed exist.
3. Using the entire set of available data (unit and sample; current and historic) for the analyses would cause drain on project resources inappropriate to the objectives of the effort, since digitization of all of the data would be required. For nonlongitudinal analyses, therefore, initial analyses will use only recent data. Where significant relationships are found, or where EFNEP management requirements necessitate longitudinal study, analyses covering a broader range of reporting periods will be performed.

Analytic Issue #1: Extent of Change in EFNEP Performance in
Effecting Positive Changes in Target
Population Nutrition Behaviors

I. Criterion Variables:

- A. Percentage of homemakers reporting "2244 or better" at each of the food record intervals.
- B. Percentage of homemakers reporting one or more servings of each food group at each of the food record intervals.
- C. Percentage of homemakers reporting given levels of servings for each of the four food groups.

II. Independent Variables: Since the primary objective is to ascertain the extent to which the program is becoming better or worse at influencing nutritional behavior among its clients, the primary criterion variable will, of course, be time. Other variables will, however, be used to stratify the analysis to ascertain whether the success of the program is changing differently with respect to different definable subsets of the client population. The variables to be used in such stratifications include:

- A. Percentage of homemakers completing eighth grade or less.
- B. Children under 19.
- C. Children in school.

- D. Average number of children in school lunch programs.
- E. Average number of families in USDA Food Stamps Program.
- F. Average number of families on welfare.
- G. Average number of families in urban areas.
- H. Percent of families in the various income ranges.
- I. Percentage of homemakers in various age ranges.
- J. Average income.
- K. Average food expenditures.
- L. Percentage of income expended on food.

III. Statistical Procedures:

- A. Calculation of correlations between reporting period and criterion variable for all stratifications.
- B. Where appropriate, calculation of mean values for criterion variables for all combinations of reporting period, food record, and stratification variable.
- C. Where appropriate, calculation of trend equations for individual criterion variables over time for all food record numbers and stratification sets.

- IV. Comments: The correlations, trend lines, and comparisons of mean criterion values across time will be appropriate only in the event that the criterion variable scores for the initial food recalls are more or less identical. If they are not, a criterion of mean increase in the criterion variable values will have to be substituted for the raw criterion values as currently available in the sample data base.

Analytic Issue #2: Length of Time Required for Given Amounts
of Change in the Target Population Nutrition
Behaviors to Occur

I. Criterion Variables:

- A. Percentage of homemakers reporting "2244 or better" at each of the food recall intervals.
- B. Percentage of homemakers reporting one or more servings of each food group at each of the food recall intervals.

- Personal
Memo*
- C. Percentage of homemakers reporting given levels of servings for each of the four food groups at each of the food recall intervals.
 - D. Average number of food recall intervals to reach an absolute criterion of level of one or more of the criterion variables.
 - E. Average number of food recall intervals required to attain a certain percentage increase over the level of the initial food recall for one or more of the criterion variables.

II. Independent Variables: As in "Analytic Issue #1," the primary independent variable here is time. Some additional variables can be used to stratify the analyses to determine whether the time interval required to obtain given levels or percentage increases in nutrition behavior is different for the different groups defined by the stratification variables. These variables may include:

- A. Percentage of homemakers completing eighth grade or less.
- B. Average percentage of children under 19.
- C. Average number of children in school.
- D. Average number of children in the school lunch program.
- E. Average number of families in the USDA Food Stamps Program.
- F. Average number of families on welfare.
- G. Average number of families in urban areas.
- H. Percentage of families in various income groups.
- I. Percentage of homemakers in various age ranges.
- J. Average income.
- K. Average food expenditures.
- L. Percentage of income spent on food.

III. Statistical Procedures:

- A. For given reporting periods, calculation of the number of food recall intervals necessary for a given food behavior increment to be obtained.

- B. Graphing of the number of food recall intervals necessary for given food behavior increments to be attained across reporting periods.
- C. Replications of the above procedures for all subsets defined by stratification variables.

Analytic Issue #3: Identification of Characteristics of Aides, Volunteers, Homemakers, and Program Related to Changes in Nutritional Behaviors

I. Criterion Variables:

- A. Percentage of homemakers reporting "2244 or better" at each of the food recall intervals.
- B. Percentage of homemakers reporting at lease one serving of each of the four food groups at each of the food recall intervals.
- C. Percentage of homemakers reporting given levels of servings for each of the four food groups at each of the food recall intervals.

II. Independent Variables:

A. Homemaker variables:

- 1. Percentage of homemakers completing eighth grade or less.
- 2. Percentage of children under 19.
- 3. Average number of children in school.
- 4. Average number of children in school lunch program.
- 5. Percentage of families in USDA Food Stamps Program.
- 6. Percentage of families in USDA Food Donation Program.
- 7. Percentage of families receiving USDA/FHA assistance.
- 8. Percentage of families in various income ranges.
- 9. Percentage of families in various age ranges.
- 10. Average family income.
- 11. Average food expenditures.
- 12. Average percentage of income spent on food.

- B. Aide variables: The sample data contains no data on aide characteristics. It may be possible, however, to treat the differences between the distribution of aide racial/ethnic characteristics and that of the homemaker

as an independent variable. One could then examine the extent to which differences in these distributions is related to nutritional behavior of the program families of the unit. To do this, aide characteristics from the unit report would have to be correlated with nutritional behavior data from the sample unit report.

C. Volunteer variables: As with the aide variables discussed immediately above, the sample unit report contains no data on the characteristics of volunteers. Again, a variable indicative of racial/ethnic distribution of the volunteers to those of the homemakers could be calculated and used to measure the effect of differences in these distributions on nutritional behavior.

D. Program variables:

1. Ratio of aides to program families.
2. Ratio of volunteers working with adults to program families.
3. Ratio of nonprogram to program families.
4. Ratio of aide visits to program families to total program families.

III. Statistical Procedures:

- A. Correlation of criterion variables with all relevant independent variables.
- B. Where appropriate, calculation of mean criterion variable levels for various categories of independent variables.

Analytic Issue #4: Relationship of Food Expenditures to Nutritional Behaviors

I. Criterion Variables:

- A. Percentages of homemakers reporting "2244 or better" at each of the food recall intervals.
- B. Percentage of homemakers reporting one or more servings of each food group at each of the food recall intervals.
- C. Percentage of homemakers reporting given levels of servings for each of the four food groups at each of the food recall intervals.

II. Independent Variables: Primary independent variables will include:

- A. Average food expenditure.
- B. Average percentage of income spent on food.

In addition to the independent variables listed above, several stratification variables will be used to attempt to control factors which have an obvious impact on the food value received for dollar spent. These will include:

- A. Percentage of families in the USDA Food Stamps Program.
- B. Average number of children in the school lunch program.
- C. Percentage of total school age children in program families who participate in the school lunch program.
- D. Percentage of families in urban areas.

III. Statistical Procedures:

- A. Correlations between criterion and independent variables.
- B. Where appropriate, calculation of mean values of criterion variables for various levels of independent variables.
- C. Within various levels, for stratification variables, correlation of criterion variables with independent variables.

IV. Comments: A more powerful examination of the effects of USDA Food Stamp Program participation on the relationship between food expenditures and nutritional behaviors is outlined in the discussion of Analytic Issue #10 which appears later in this section of the Plan.

Analytic Issue #5: Identification of the Extent to Which EFNEP Is Succeeding or Failing to Work With an Appropriate Target Population

- I. Criterion Variables: The criterion variables for the analysis cannot be derived wholly from the Sample Unit and Unit Report data provided by EFNEP. To adequately assess this aspect of EFNEP operations, some estimate of the composition of the low income, nutritionally deficient population in each of the EFNEP Units must be available. It is probable that this information can be obtained from Census data, though the availability of historical information is somewhat less assured. It should be noted that a precise stipulation of

the characteristics of the "target population" for given Program units may be impossible. Reasonable estimates of the characteristics should, however, be attainable. Given these estimates, appropriate criterion variables will include:

- A. Average differences in racial/ethnic composition between target population and EFNEP client families.
- B. Difference in average income level between target population and EFNEP client families.
- C. Differences in family size between target population and EFNEP client population.
- D. Differences in percentage of urban families between target population and EFNEP client population.

II. Independent Variables: The primary purpose of this analysis is to determine the extent to which EFNEP is appropriately reaching the population most in need of its services. Therefore, no "independent variable" as such is appropriate to this analysis; the objective is to investigate the extent to which the EFNEP client population differs from the target population in each Program unit. Some stratification variables are, however, appropriate.

- A. States (to evaluate the extent to which different state plans affect targeting).
- B. Differences between percentage racial/ethnic distributions of target population and those of program aides.
- C. Differences between percentage racial/ethnic distributions of target population and those of program volunteer.

III. Statistical Procedures:

- A. Frequency distributions of criterion variables.
- B. Frequency distributions of criterion variables by state.
- C. Joint frequency distributions of target population/aide racial/ethnic distribution differences and target population/homemaker racial/ethnic distribution.
- D. Joint frequency distributions of target population/volunteer racial/ethnic distribution differences and target population/homemaker racial/ethnic distribution.

Analytic Issue #6: Extent to Which the Ratio of Program Families to Nonprogram Families Has Changed

I. Criterion Variables:

A. Ratio of program families to nonprogram families.

II. Independent Variables: The only independent variable of any significance is time, measured here by the report period being examined. It is possible, however, that stratification of results by state will provide some useful information in terms of differences in the ratio of program to nonprogram families attributable to differences in state policies. The lack of information about the nonprogram families themselves limits the utility of any further stratifications.

III. Statistical Procedures:

- A. Correlation of ratio of program families to nonprogram families over time (report periods).
- B. Where appropriate, calculation of overall ratio of program families to nonprogram families over time.
- C. Correlation of ratio of program families to nonprogram families over time within states.
- D. Where appropriate, calculation of overall ratio of program families to nonprogram families over time.

Analytic Issue #7: Costs of Program Per Family

Analysis of the costs of the EFNEP program per family is, of course, impossible without expenditure data. Stipulation of the exact nature of such analyses must, of course, await examination of the kind and quality of expenditure data available.

Analytic Issue #8: Differences in the Relative Effectiveness of Group and Individual Interactive Styles of Aide/Client Interaction

I. Criterion Variables:

- A. Percentage of homemakers reporting "2244 or better" at each of the food record intervals.
- B. Percentage of homemakers reporting one or more servings of each food group at each of the food record intervals.
- C. Percentage of homemakers reporting given levels of servings of each of the four groups at each of the food recall intervals.

- D. Number of food recall intervals required to reach an absolute criterion of level of one or more criterion (nutrition behavior) variables.
- E. Number of food recall intervals required to attain a certain percentage increase over the level of the initial food recall for one or more of the criterion (nutrition behavior) variables.

II. Independent Variables:

- A. Percentage of families worked with individually.
- B. Percentage of families worked with in groups.
- C. Percentage of families worked with both individually and in groups.

III. Statistical Procedures:

- A. Correlation between independent and dependent variables.
- B. Where appropriate, calculation of mean criterion variable values for various levels of the independent variables.

Analytic Issue #9: Reasons for High Aide Turnover

- I. Criterion Variables: Number of aides dropped during six-month reporting period.

II. Independent Variables:

- A. Ratio of program families to aides at beginning of reporting period.
- B. Ratio of program families to aides at end of reporting period.
- 2 C. Ratio of nonprogram families during last month of reporting period to aides at beginning of reporting period.
- D. Ratio of nonprogram families during last month of previous reporting period to aides at beginning of reporting period.
- E. Ratio of 4-H youth (total; from program families; from nonprogram families) during last month of reporting period to aides at beginning of reporting period.

- ✓ *original*
- F. Ratio of 4-H youth (total; from program families; from nonprogram families) during last month of previous reporting period to aides at beginning of reporting period.
 - G. Ratio of volunteers (total; working with youth; working with adults; working with both youth and adults) during last month of reporting period to aides at beginning of reporting period.
 - H. Ratio of volunteers (total; working with youth; working with adults; working with both youth and adults) during last month of previous reporting period to aides at beginning of reporting period.
 - I. Number of aides added during reporting period.
 - J. Index of differences between racial/ethnic distributions of aides and homemakers.
 - K. Index of differences between racial/ethnic distributions of aides and volunteers.
 - L. Number of food recall intervals required to reach an absolute criterion of level of one or more nutritional behavior variables.
 - M. Number of food recall intervals required to attain a certain percentage increase over the level of the initial food recall for one or more of the nutritional behavior variables.
- important to include in final report*

III. Statistical Procedures:

- A. Correlation of independent variable with criterion variable.
- B. Where appropriate, calculation of mean criterion variable levels for various intervals of independent variables.

Analytic Issue #10: Differences in Family and Other Characteristics Between Food Stamp and Non-Food Stamp Recipients

Separate analyses of USDA Food Stamp Program participants and non-participant groups will entail reapplication of several of the analyses described earlier. Specifically, the following analyses will be replicated:

Analytic Issue #2: Length of Time Required for Given Amounts of Change in Target Population Nutrition Behaviors to Occur.

Analytic Issue #3: Identification of Characteristics of Aides, Volunteers, Homemakers, and Programs Related to Changes in Nutritional Behaviors.

Analytic Issue #4: Relationship of Food Expenditures to Nutritional Behaviors and Expenditures.

Analytic Issue #8: Differences in the Relative Effectiveness of Group and Individual Styles of Aide/Client Interaction.

In addition, comparisons of the two groups along all relevant dimensions (i.e., those defined by family and homemaker characteristics on the Sample Unit record) will be made.



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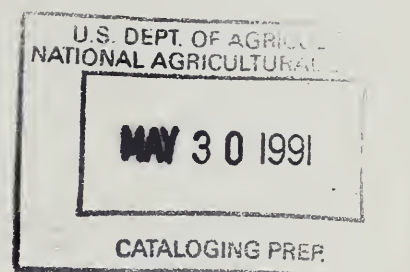
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MARCH 1977 EFNEP DATA:
CORRELATION AND TREND ANALYSES .



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May 1978

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INTRODUCTION

Analyses of the March 1977 data fall into two general categories: correlation analyses in which the relationships among the various elements in the EFNEP reporting system were identified, and trend analyses, which focus on the changes in the status of EFNEP operations over time. The basic source of most of the information for these analyses were the Unit and Sample Reports produced by local EFNEP units throughout the country.

CORRELATION ANALYSES

Product moment correlation coefficients were calculated for a selected subset of variables included in the EFNEP Unit and Sample Reports. The purpose was to attempt to identify associations among variables and groups of variables having a high potential for indicating changes in EFNEP operations which could increase EFNEP efficiency, effectiveness, and targeting.

For clarity and convenience, EFNEP variables have been clustered into eight groups. Six groups of variables were derived from the Sample Unit data:

1. Program variables, including number of program families and the total number of persons in the program families.
2. Family variables, including average number of persons per family, number and schooling status of children in families, school lunch participation of children, and participation of the family in assistance programs of various sorts.
3. Aide working style variables, including the percentage of program families worked with in the reporting months, the setting in which program families participated (individual, group, both), and aide visits per program family.
4. Family income and expenditure variables, including income category of the family, income reported on the food recalls, amount spent for food, and percentage spent for food.
5. Homemaker variables, including age category and education level.
6. Food behavior variables, including consumption patterns in each of the four food groups, attainment of at least one serving in each of the four food groups, and attainment of completely adequate diets (2244 or greater). In addition, difference scores for successive food recalls were calculated and included in the analysis.

Two additional groups of variables were derived from Unit reports:

1. Program role variables, which characterize the numbers, turnover, and/or activity modes of program personnel (homemakers, aides, volunteers, and youth) within units.
2. Ethnic distribution variables, which describe the percentages of program personnel in various ethnic categories.

Four points should be emphasized as a preface to a discussion of analytic results:

1. No correlations with an absolute value of less than .300 are discussed as indicating true relationships among program variables, since figures lower than this mean that less than 9 percent of the variability in the figures was accounted for by the relationship between the variables. Lower correlation values can occur quite often on the basis of chance, and are generally not useful for planning and administrative guidance.
2. These results are derived from the first in a series of three analyses; those of the September 1977 and March 1978 EFNEP data are also to be performed. One test of the practical significance of observed relationships is the extent to which they hold up over time. Thus, observations and recommendations made in this document should not be treated as final. Subsequent analyses will shed more light on the validity and stability of the relationships within the March 1977 data.
3. In interpreting the results presented herein, the reader must bear in mind that the variables used in the analysis are totals, percentages, and averages of unit characteristics, not characteristics of the homemakers themselves. The inability to identify the characteristics and progress of individual homemakers implies that any results of this kind of analysis should be considered with care. Ideally, they will be best employed to define more detailed and controlled studies of the characteristics in question, rather than being used to define EFNEP procedures directly.
4. For intercorrelations among Sample variables, separate analyses were performed for Food Stamp recipients (FS), Food Stamp nonrecipients (NFS), and the combined total of the two groups. Where differences among the three groups occur, they are highlighted. Separate FS and NFS subsets were not available for the unit data, however; correlations between Unit variables and Sample variables were limited to the total (FS and NFS) group.

Discussions of the results of the analyses are organized as indicated in Figure 1. This figure may be used as a guide to investigation of particular kinds of relationships in which the reader may be interested.

Program Role Variables X Food Behavior Variables

There was a weak negative correlation ($r = -.307$) between the number of program families at the end of the reporting period and the percentage of families reporting 0 servings of meat on FR #1. This correlation is probably the result of chance, and in any event has no obvious implications for EFNEP operations.

UNIT DATA

SAMPLE DATA

PROGRAM ROLE VARIABLES	ETHNIC BACKGROUND VARIABLES	PROGRAM VARIABLES	FAMILY VARIABLES	HOMEMAKER VARIABLES	AIDE WORKING STYLE VARIABLES	FAMILY INCOME AND EXPENDITURE VARIABLES	FOOD BEHAVIOR VARIABLES
p. 4	p. 6	p. 6	p. 6	p. 6	p. 7	p. 8	p. 8
p. 8	p. 8	p. 9	p. 9	p. 9	p. 9	p. 9	
p. 10	p. 10	p. 11	p. 11	p. 11	p. 11		
p. 11	p. 11	p. 11	p. 12	p. 12			
p. 13	p. 13	p. 13	p. 13				
p. 13	p. 14	p. 14					
p. 14	p. 15						
p. 15							

S A M P L E

U N I T A

Figure 1. Page Numbers of Discussion of Results of Correlation Analysis Among Classes of Variables

Ethnic Background Variables X Food Behavior Variables

There is a weak indication that units with a higher percentage of white homemakers tend to have low meat consumption averages (correlations range from .306 to .361) after program entry (i.e., on food recalls 2 and 3). The reasons for this pattern of association are unclear, but the relationship is a weak one and may result from random effects. In any event, there are no telling implications for EFNEP operations.

No other strong relationships were noted.

Program Variables X Food Behavior Variables

No significant correlations were found in the combined data set; there appears to be no significant linear relationship between the size of the unit (as measured by number of homemakers or total number of people on program families) and the average food behavior performance of the homemakers in that unit. This situation was also found in the FS subset.

In the NFS subgroup, weak relationships were found between the total number of program families in the unit and:

1. Average percentage of homemakers reporting 0 meat servings on food recall (FR) #1 ($r = .316$).
2. Average difference in percentage of homemakers reporting 0 meat servings on FR #3 and the percentage of homemakers reporting 0 meat servings on FR #1 ($r = -.333$).
3. Average percentage of homemakers reporting 0 servings of fruit and vegetables on FR #1 ($r = .320$).

These figures suggest a weak tendency for nonfood stamp recipients in large units to have a slightly worse diet in meat and fruit and vegetables than those in larger units. The relationship is not a strong one, however, and has no important implications for EFNEP operations.

Family Variables X Food Behavior Variables

No consistent significant correlations were found in the FS, NFS, or combined groups; there appears to be no relationship of practical significance between unit food behavior patterns and the average distribution of children within the family; participation in school lunch programs; or participation in welfare and other assistance programs.

Homemaker Variables X Food Behavior Variables

In the combined group, weak-to-moderate relationships were observed between the percentage of homemakers with an eighth grade education or less and:

1. The percentage of homemakers reporting 0 servings of bread and cereals on FR #4 ($r = -.433$).
2. The difference between FR #1 and FR #5 in the percentage of homemakers reporting 0 bread and cereal servings ($r = .480$).
3. The difference between FR #1 and FR #7 in the percentages of homemakers reporting 0 bread and cereal servings ($r = .354$).

More weak relationships existed between the percentage of homemakers less than 25 years of age and the percentage of homemakers reporting 0 servings of bread and cereals on FR #1 ($r = .316$), and between the percentage of homemakers greater than 55 years of age and:

1. The percentage reporting 0 bread and cereal servings ($r = -.335$).
2. The percentage reporting 0 fruit and vegetable servings ($r = -.331$).
3. The percentage reporting 1 or 2 bread and cereal servings ($r = -.345$).

For the FS subgroup, similar correlation patterns emerge; no correlations of practical significance were found in the NFS group.

These indicate a tendency for units with a higher proportion older and less educated homemakers to slightly more adequate diets in breads and cereals than those with younger and better educated homemakers. The relationship is not particularly strong, however, and probably has no compelling implications for EFNEP operations. Homemaker age and education are statistically coupled (see "Homemaker Variables vs. Homemaker Variables," p. 12), and the effects on food behavior not directly separable gives the limitations of the data. One plausible hypothesis is that younger homemakers are more likely to be dieting, a situation which may cause them to avoid foods traditionally viewed as "fattening." It is not possible to test this conjecture using available printout data.

Aide Working Style Variables X Food Behavior Variables

In the combined group no significant correlations were found. In both the FS and NFS groups, weak correlations between the percentage of homemakers participating in group settings and the percentage scoring 0 on FR #2 were observed ($r = .327$ and $.392$, respectively). This might indicate that group settings are less effective in promoting the consumption of breads and cereals than individual or combined (individual and group) settings, but the lack of a consistent pattern of correlations in food behavior and food behavior difference scores implies that these relationships are not sufficiently strong and pervasive to warrant consideration for EFNEP operations.

Family Income and Expenditure Variables X Food Behavior Variables

In the combined (FS + NFS) groups, mean reported income on FR #1 was weakly correlated with the incidence of reports of \emptyset bread and cereal servings on FR #1 ($r = .343$). This correlation was repeated in the FS subgroup ($r = .354$), but no such relationship was observed in the NFS group. The correlations indicate a slight tendency for more affluent homemakers entering the program to consume less breads and cereals; the relationship is not strong enough to have important implications for EFNEP operations, and is quite possibly due to random effects in the data.

Food Behavior Variables X Food Behavior Variables

No correlations beyond those among variables which are confounded were observed in the FS, NFS, or combined groups.

Program Role Variables X Family Income and Expenditure Variables

There were weak correlations between the percentage of volunteers working with both adults and youth and:

1. The mean dollar amount spent on food reported on food recall #7 ($r = .441$).
2. The mean percentage of income spent for food reported on FR #7 ($r = .484$).

The two "income and expenditure" variables are highly confounded; therefore, these correlations are probably due to chance effects.

No other correlations of practical significance were noted.

Ethnic Background Variables X Family Income and Expenditure Variables

There was a moderate tendency for units with a high percentage of black personnel (homemakers, aides, volunteers, and youth) to have lower average incomes and lower average amounts spent on food (correlations ranged from $-.301$ to $-.394$). This probably reflects the generally lower income level of black citizens in general.

Units with a high percentage of Spanish-surname personnel tended to have higher incomes (correlations ranged from $.303$ to $.435$). The reasons for this pattern of association are not clear.

Family Income and Expenditure Variables X Program Variables

No relationships of practical significance were found in the FS, NFS, or combined groups.

Family Income and Expenditure Variables X Family Variables

No relationships of practical significance were found in the combined data. In the FS subgroup, a weak negative correlation was obtained between the percentage of families in the unit receiving \$418 or more and the percentage of children in school lunch as a percentage of total children ($r = -.357$). In the NFS subgroup, a weak relationship exists between average income reported on FR #1 and children under 19 as a percentage of total family members ($r = .321$). Since these relationships are not part of an overall pattern, they have no important implications for EFNEP activities.

Family Income and Expenditure Variables X Homemaker Variables

In all groups (combined, FS, and NFS) there are weak-to-moderate negative correlations between reported income and age and weak-to-moderate positive correlations between reported income and education. For the combined group, the absolute value of these correlations ranged from .399 to .401; for the FS group, the range was .337 to .389; and for the NFS group, .321 to .466. These figures indicate that homemakers who are young and better-educated enter the program at relatively higher income levels. The correlations are generally stronger for the NFS than for the FS group, probably because of the presence of income limitations for Food Stamp reciprocity.

Family Income and Expenditure Variables X Aide Working Style Variables

In the combined (FS + NFS) group, weak relationships exist between income and the mean percentage of families worked with by aides, with the absolute values ranging from .304 and .343. The relationships are negative, indicating that a large percentage of families worked with is associated with lower income. The correlations are not strong, and implications for EFNEP operations are in any case not obvious.

Family Income and Expenditure Variables X Family Income and Expenditure Variables

In general, the correlations here are as expected: units with higher incomes also tend to spend more on food, and units reporting high average incomes on FR #1 also tend to report higher incomes on subsequent food recalls (r ranges from .487 to .720), though the correlations drop numerically as food recalls are removed in time from one another. The correlations

between average income and amount spent on food in the combined (FS + NFS) group are relatively low, ranging from less than .300 to .509, indicating a wide variability in the proportion of family income reported spent on food.

For the FS group, the pattern of correlations among income reported on FR #1 and subsequent food recalls was similar to that in the combined group (r ranged from .460 to .739). Correlations between average income on FR #1 and amount spent on food for the various food recalls is higher, however (r ranging from .343 to .542), probably reflecting the leveling effect of Food Stamp reciprocity.

For the NFS group, average income as reported on FR #1 was again correlated relatively highly with income reported on subsequent food recalls (r ranging from .379 to .714). Only the correlations between the amount of income reported on FR #1 and the amount spent on food for FR #1 was greater than .300 ($r = .523$); correlations with food expenditures on subsequent food recalls were less than .300.

Program Role Variables X Aide Working Style Variables

Weak negative measures were noted between various measures of unit size (numbers of homemakers, numbers of aides) and the percentage of families worked with by aides (r ranged from $-.305$ to $-.326$). This pattern of correlations may mean that aides have more difficulty working with a large percentage of families in large units; the relationships are, however, too weak to have much bearing on the nature of EFNEP operations.

Another relatively weak correlation was noted between the total number of program families in the unit, during the last month of the reporting period and the percentage of families worked with by aides ($r = -.395$). Since the number of nonprogram families is not too highly coupled with other variables measuring program size (correlations range between .30 and .40), this could indicate a slight tendency for a large number of nonprogram families to make it difficult for aides to work with a large percentage of their program families. Since a practically significant correlation was not observed between the percentage of families worked with and the ratio of program families to nonprogram families, however, it is apparent that the relationship is not a simple one. This phenomenon bears further detailed investigation in subsequent analyses.

Ethnic Background Variables X Aide Working Style Variables

There was a weak tendency for units with high percentages of Spanish-surname homemakers to have low percentages of families worked with ($r = -.328$). This finding is probably coupled with that indicating that Spanish-surname families tend to appear more often in larger units (see "Program Role Variables X Ethnic Background Variables," p. 14).

Units with large numbers of volunteers showed a slight tendency to have lower percentages of program families who were worked with individually by program aides ($r = -.311$). The reasons for this observation are unclear, but the correlation is low enough to have no practical consequences.

Aide Working Style Variables X Program Variables

In the combined group (FS + NFS), a weak relationship exists between the percent of families worked with and the total number of program families in the unit ($r = -.326$). This would tend to indicate that in larger units aides tend to manage to work with fewer of these families. This result is not surprising, nor is it sufficiently telling to have significant implications for future EFNEP activities.

Aide Working Style Variables X Family Variables

In the combined (FS + NFS), FS, and NFS groups, no correlations of practical significance existed between aide working style variables and family variables.

Aide Working Style Variables X Homemaker Variables

In all groups (combined, FS, and NFS), no correlations of practical significance were observed between aide working style variables and either homemaker age or homemaker education.

Aide Working Style Variables X Aide Working Style Variables

In all groups (combined, FS, and NFS), there were moderately high positive correlations between the percentage of families worked with and the number of families worked with individually as a percentage of the total ($r = .642, .683, \text{ and } .605$, respectively), and between the percentage of families worked with and the number of aide visits per program family ($r = .459, .509, \text{ and } .465$). These relationships are relatively strong, but their implications for EFNEP operations are not clear.

Program Role Variables X Homemaker Variables

There were no correlations of practical significance between program role variables and unit distributions of homemaker age or education.

Ethnic Background Variables X Homemaker Variables

No strong associations were noted between ethnic background and homemaker education or age.

Homemaker Variables X Program Variables

Correlations of practical significance were not found in any of the groups (combined, FS, and NFS).

Homemaker Variables X Family Variables

In the combined group, a weak negative correlation was found between homemaker education and the percentage of children in school lunch as a percentage of children in school ($r = .309$). This correlation is quite low, and may result from random effects, since it does not appear as part of a pattern.

In the FS group, there are weak negative correlations between the percentage of homemakers reporting less than a ninth grade education and two other variables: percentage of homemakers receiving welfare ($r = -.345$) and the percentage of homemakers reporting urban residence ($-.303$). These correlations are too low to have any practical significance for EFNEP operations.

In the NFS group, the percentage of homemakers in the 25-55 age category was positively correlated with:

1. Children under 19 as a percentage of total persons in the family ($r = .563$).
2. Children in school as a percentage of total persons in the program family ($r = .566$).
3. Children in school lunch as a percentage of school children in the family ($r = .352$).

Coupled with these relationships are weak-to-moderate correlations between the percentage of homemakers more than 55 years old and:

1. Children under 19 as a percentage of the total number of persons in program families ($r = -.541$).
2. Children in school as a percentage of the total number of persons in program families ($r = -.343$).

In general, these data seem to indicate that mature homemakers (those 25-55 years old) tend to have a larger number of school children than do older homemakers (those older than 55). This is, of course, an expected result, and has no clear implications for EFNEP operations. The reason for the confinement of this effect to the NFS group is unclear.

Homemaker Variables X Homemaker Variables

Across all three groups (combined, FS, and NFS), there are moderate correlations (r ranges from .382 to .529) indicating that homemakers with less education tend to be older, while those with more education tend to be younger. This situation is probably the result of more strict enforcement of compulsory education laws in the recent past.

Program Role Variables X Family Variables

There was a slight tendency for larger units to have higher percentages of homemakers reporting urban residence (correlations average about .45). This result is not surprising, nor does it have any important implications for EFNEP operations.

Ethnic Background Variables X Family Variables

Several weak relationships were noted:

1. Units with large percentages of white personnel tended to have lower percentages of school children and children in school lunch programs (r ranged from $-.314$ to $-.329$).
2. Units with large percentages of black personnel tended to have higher percentages of school children in school lunch programs (r range = $.314$ to $.317$).
3. Units with large percentages of Spanish-surname homemakers tend to have high percentages of homemakers reporting urban residence ($r = .324$).

In addition, one strong relationship existed: units with high percentages of American Indian homemakers tended to report high percentages of receipt of donated foods ($r = .917$). There are apparently donated food programs still operating with native American groups.

Family Variables X Program Variables

Across all three groups (combined, FS, and NFS), there are weak correlations between the percentage of homemakers reporting urban residence and the total number of program families ($r = .400$, $.368$, and $.325$, respectively). This result indicates that large units have a slight tendency to exist in urban areas; this is neither unanticipated nor significant for EFNEP operations.

Family Variables X Family Variables

Aside from expected results (such as correlations between average family size and number of children), only one high correlation appeared: in the combined group, there was a moderate positive relationship between the percentage of families receiving welfare and the percentage of families receiving food stamps ($r = .524$). Again, the result is neither unexpected nor of practical significance for EFNEP.

Program Role Variables X Program Variables

The correlation between the number of program families and the size of the unit was not as large as might be expected (correlations were in the

+ .400 range). This implies that some relatively small units (in terms of numbers of program families and aides) may be carrying a relatively large number of nonprogram families. This could have serious impacts on aide effectiveness with program families (assuming that aides are spending time with the nonprogram families).

Another interpretation is that some units are still not properly attuned to the meaning of the terms "program family" and "nonprogram family"; the EFNEP reporting system may therefore be reflecting "ghost" nonprogram families from some units--families who are neither formally a part of EFNEP nor are being actively worked with by aides.

Given the limitations of the printout data, it is not possible to determine whether either or both of the above hypotheses are accurate. There are, however, some indications that large numbers of nonprogram families do interfere somewhat with aide interaction with program families (see "Program Role Variables X Aide Working Style Variables," p. 10). A more detailed examination of the nonprogram family situation by EFNEP administrators may therefore be warranted.

Ethnic Background Variables X Program Variables

In general, units with large numbers of program homemakers tended to have:

1. Lower percentages of white personnel (r in the .30 to .35 range).
2. Higher percentages of Spanish-surname personnel (r in the .40 to .45 range).

Program Variables X Program Variables

Correlations of practical significance were not found in any of the groups.

Program Role Variables X Ethnic Background Variables

Larger units (as measured in terms of program families) tended to have:

1. Higher percentages of Spanish-surname persons (homemakers, aides, volunteers, and youth) enrolled in the program (correlations ranged from about .33 to .43).
2. Lower percentages of white homemakers, aides, volunteers, and youth (correlations ranged from insignificant to about -.420).

These results indicate a tendency for Spanish-surname families to appear in larger, rather than smaller, units. Since larger units have a slight

tendency to have a larger percentage of homemakers reporting urban residence, this result may indicate that urban EFNEP units tend to be minority oriented.

Ethnic Background Variables X Ethnic Background Variables

As expected, units showed a high degree of homogeneity in ethnic distribution across the various EFNEP role types. Units with large percentages of homemakers in a given ethnic category also tended to have large percentages of aides, youth, and volunteers in that ethnic category (see Table 1).

Program Role Variables X Program Role Variables

In general, correlation patterns here are about as would be expected:

1. The number of program families correlates very highly with the number of program aides ($r = .889$).
2. The number of program volunteers correlates highly with the number of youth ($r = .745$).

The size of the program in terms of homemakers and aides did not correlate highly with the number of volunteers ($r = .328$) or the number of youth ($r = .334$). This indicates that concentration in volunteerism and the youth component is highly variable across units: some relatively small units may have active youth components, while some fairly large ones may have a low emphasis on this component of EFNEP.

Table 1

Correlations Between Percentage of Homemakers in Ethnic Groups and Percentages of Other EFNEP Personnel in the Same Ethnic Group

ETHNIC GROUP OF PROGRAM HOMEMAKER					
White (%)	Black (%)	Spanish Surname (%)	American Indian (%)	Oriental (%)	Other (%)
+ .917	+ .929	+ .974	+ .945	+ .960	< .300
+ .840	+ .865	+ .943	+ .870	< .300	< .300
+ .867	+ .885	+ .952	+ .933	+ .621	< .300

Aides (%)

Other Personnel of Same Ethnic Group or Homemaker

Volunteers (%)

Youth (%)

TREND ANALYSES

Trend analyses were performed to examine the changes in the status of EFNEP activities over time. Trends in three areas were examining:

1. EFNEP efficiency, dealing with the relative efficiency of EFNEP aides in acquiring homemaker working with homemaker and moving homemakers through EFNEP.
2. EFNEP targeting, dealing with the extent to which EFNEP is working with an appropriate population of homemakers and youth.
3. EFNEP effectiveness, dealing with the impact of EFNEP on the food behaviors of it's clients.

Some of the trend datasets included here do not include March 1977 data. This situation occurs because unit data for March 1977 was collected on a sample basis, and may not be comparable to previous year.

Program Efficiency

1. NUMBER OF PROGRAM FAMILIES

- a. STATUS: Currently, about a quarter of a million families officially enrolled in the program.
- b. TREND: From the inception of the program, the number of program families enrolled rose rapidly until June of 1972. Since then, the number has dropped, primarily because of a constant level of funding (Figure 2). The EFNEP program reached its 1,000,000th client early in 1974, with the current cumulative total client population served approaching a million and a half (Figure 3).

2. NONPROGRAM FAMILIES are those which have never been officially enrolled in EFNEP, but with whom program aides have at least one working contact.

- a. STATUS: Currently, about 75,000 nonprogram families are active in EFNEP (Figure 4).
- b. TREND: The level of nonprogram ("other") families in EFNEP roughly parallels that of program families (Figure 4; Figure); a peak of 130,000 nonprogram families was reached in June of 1972, with the level falling off quickly in the

next six months, and then declining gradually to the current level of about 75,000. The ratio of program families to nonprogram families has remained relatively constant over the last three years at about 1:0.28; there is no significant trend in this ratio, indicating that EFNEP is doing neither better nor worse at keeping the number of nonprogram families down (Figure 5).

3. PROGRAM AIDES are characterized in two ways: (1) total number of aides, including part-time, and (2) Full-Time Equivalent (FTE) aides, or the number of aide hours worked divided by the number of hours which would have been spent by a full-time aide.
 - a. STATUS: As of June 1976, just over 6,500 aides were active in EFNEP (Figure 6); this figure represented about 4,800 FTE aides.
 - b. TREND: The numbers of both aides and FTE aides parallel the number of program families....rising rapidly from the date of the program's inception, the number of aides reached a peak of almost 9,600 in June of 1972; since then, the number has dropped steadily to the present level (Figure 2, 6, 7). The ratio of aides to FTE aides has remained relatively constant at about 1.3:1 throughout the history of EFNEP, indicating that the mix of full-time to part-time aides has not appreciably changed (Figure 8).
4. PROGRAM FAMILIES PER FTE AIDE is a measure of EFNEP program efficiency, since the more families an aide can comfortably work with the more EFNEP reaches the intended target population.
 - a. STATUS: The average FTE aide now handles about 53 families.
 - b. TREND: Since the inception of EFNEP, the number of program families per aide has been increasing (Figure 9). Lower numbers of families per aide early in the program's life are understandable, since new aides were being added (and therefore trained) and the new aide's role and responsibilities would not allow immediate assumption of the family load of a more experienced aide. The number of program families per aide continued to increase even after the program reached its peak, indicating that EFNEP as a whole continues to improve its efficiency in serving ever increasing numbers of the client population.
5. AIDE VISITS PER FAMILY
 - a. STATUS: As of March, 1977 aides averaged 1.08 visit per program family. Thus, each family in EFNEP was visited slightly more than once per month.

- b. TREND: The number of aide visits per family has increased fairly steadily since December 1972 (Figure 10). In December 1972, the figure stood at .90; reaching a high of 1.14 in June 1976, the level has dropped slightly in the March 1977 reporting period to 1.08. These data indicate that aides are working more intensively with program families now than they did in the past, a good indication that program efficiency is rising (assuming no degradation in quality of services delivered).

6. INSTRUCTIONAL SETTING

- a. STATUS: As of March, 1977, 67 percent of homemakers were involved only in individual (1:1) sessions (Figure 11); 12.4 percent were worked with in groups only (Figure 12); and 5.3 percent were worked with in both group and individual sessions (Figure 13).
- b. TREND: Over the period 1972-1977, the percentage of homemakers worked with individually has increased about two percentage points per year (Figure 11); the trend in this category has been fairly pronounced. In the same period, the percentage of homemakers worked with only in groups has generally increased, although the increase has not been a smooth one, nor has the average increase been particularly large (about 1 percentage point every year and a half) (Figure 12). The percentage of families who were involved in both group and individual session have decreased steadily at a rate averaging about one percentage point per year (Figure 13).

In general, the percentages of homemakers who participated in a single instructional context have increased at the expense of the percentage of those who were involved in both instructional contexts. The percentage of those worked with individually has increased proportionally more (and more consistently) than that for homemakers who were involved in only group sessions.

7. HOMEMAKER TURNOVER RATE is measured using the following formula.

$$\text{Turnover Rate} = \frac{(PF_D + PF_A) - (PF_B - PF_E)}{(PF_B + PF_E)}$$

where

PF_B = Program families at the beginning of the reporting period.

PF_A = Program families added during the reporting period.

PF_D = Program families dropped during the reporting period.

PF_E = Program families at the end of the reporting period.

- a. STATUS: As of June, 1976, homemaker turnover rate stood at about 33 percent (Figure 14).
 - b. TREND: There is a pronounced upward trend in homemaker turnover rate, which is increasing at about 2 percentage points per year (Figure 14). This indicates that EFNEP is increasing its efficiency in getting homemakers into and out of the program. There is a noticeable cycle, with turnover being higher in the first half of the year.
8. AIDE TURNOVER RATE is measured by a formula analogous to that used to calculate program family turnover.
- a. STATUS: As of June, 1976, the aide turnover rate stood at just under 14 percent (Figure 15).
 - b. TREND: No consistent trend is detectable; the aide turnover rate has remained relatively constant over the last four years (Figure 15).

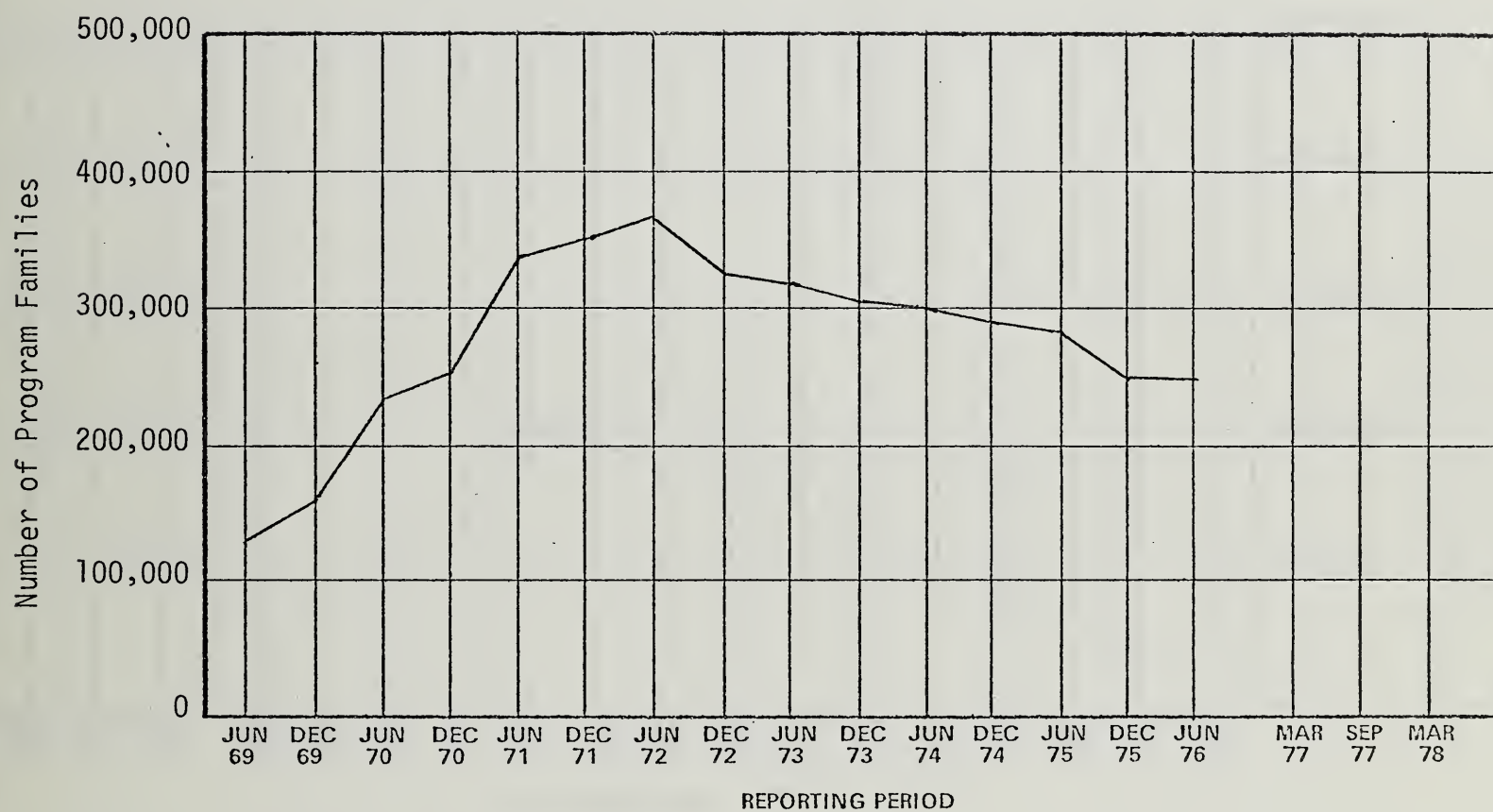


Figure 2

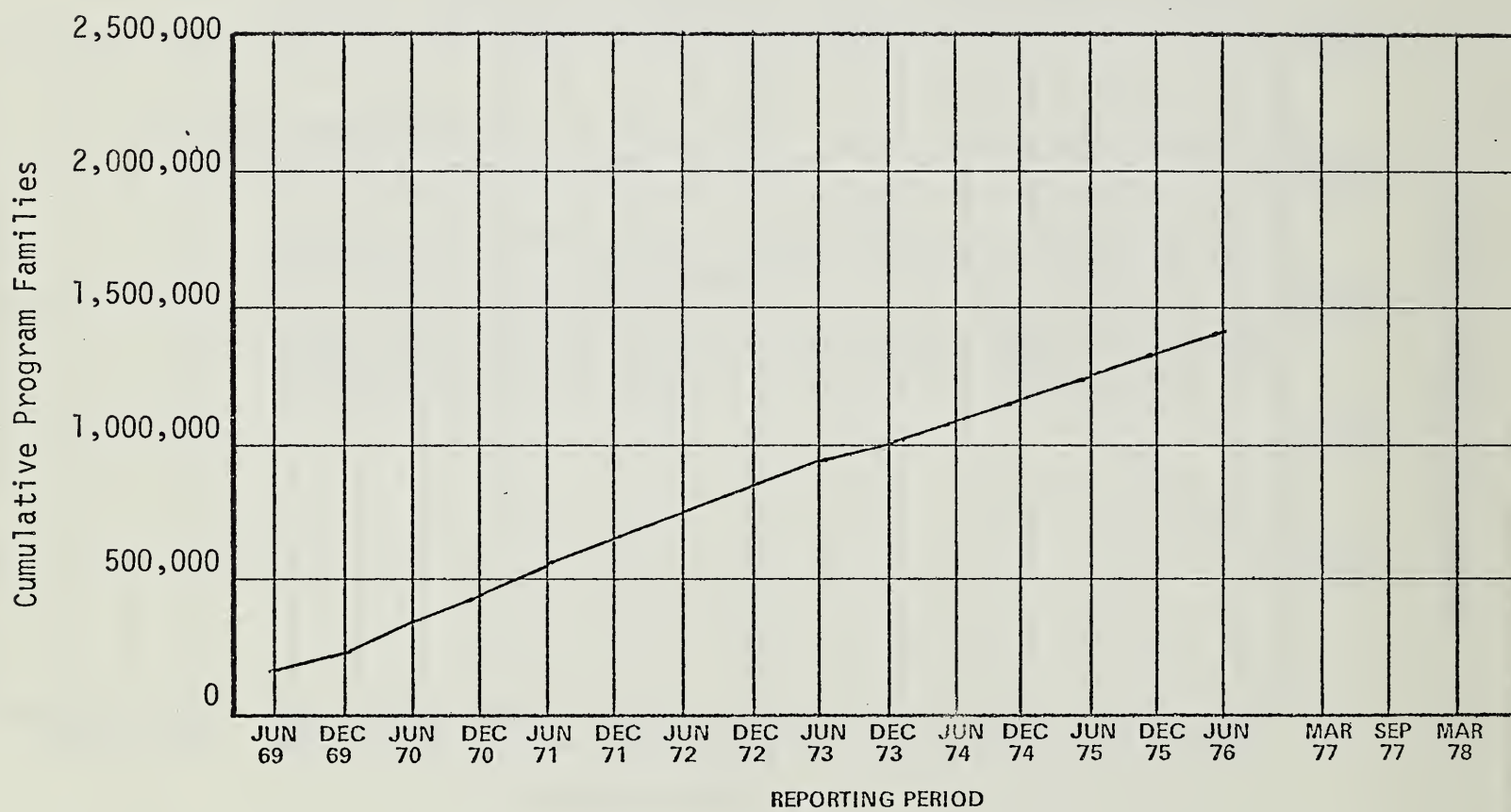


Figure 3

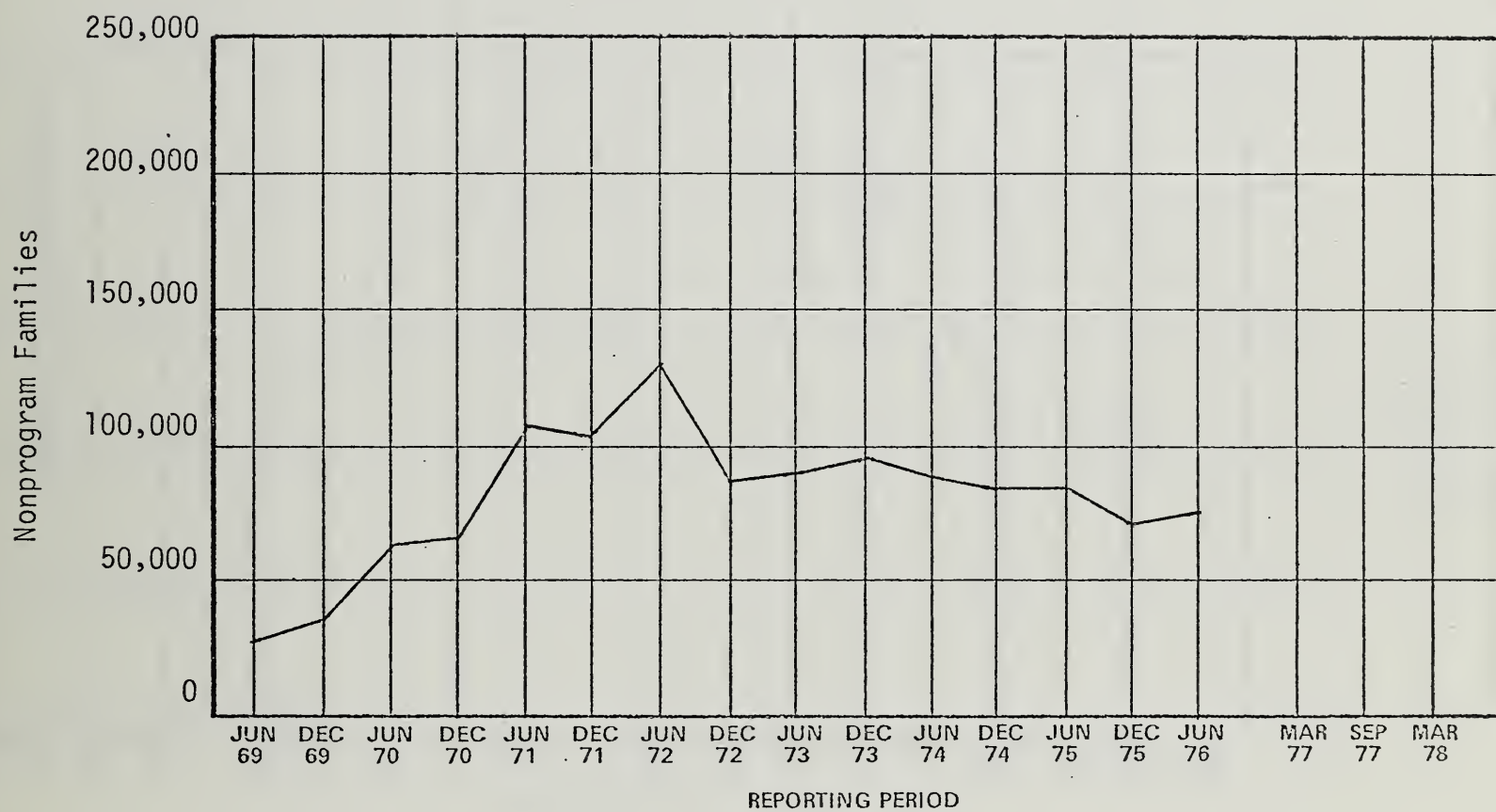


Figure 4

ratio of
onprogram
amilies to
rogram
amilies

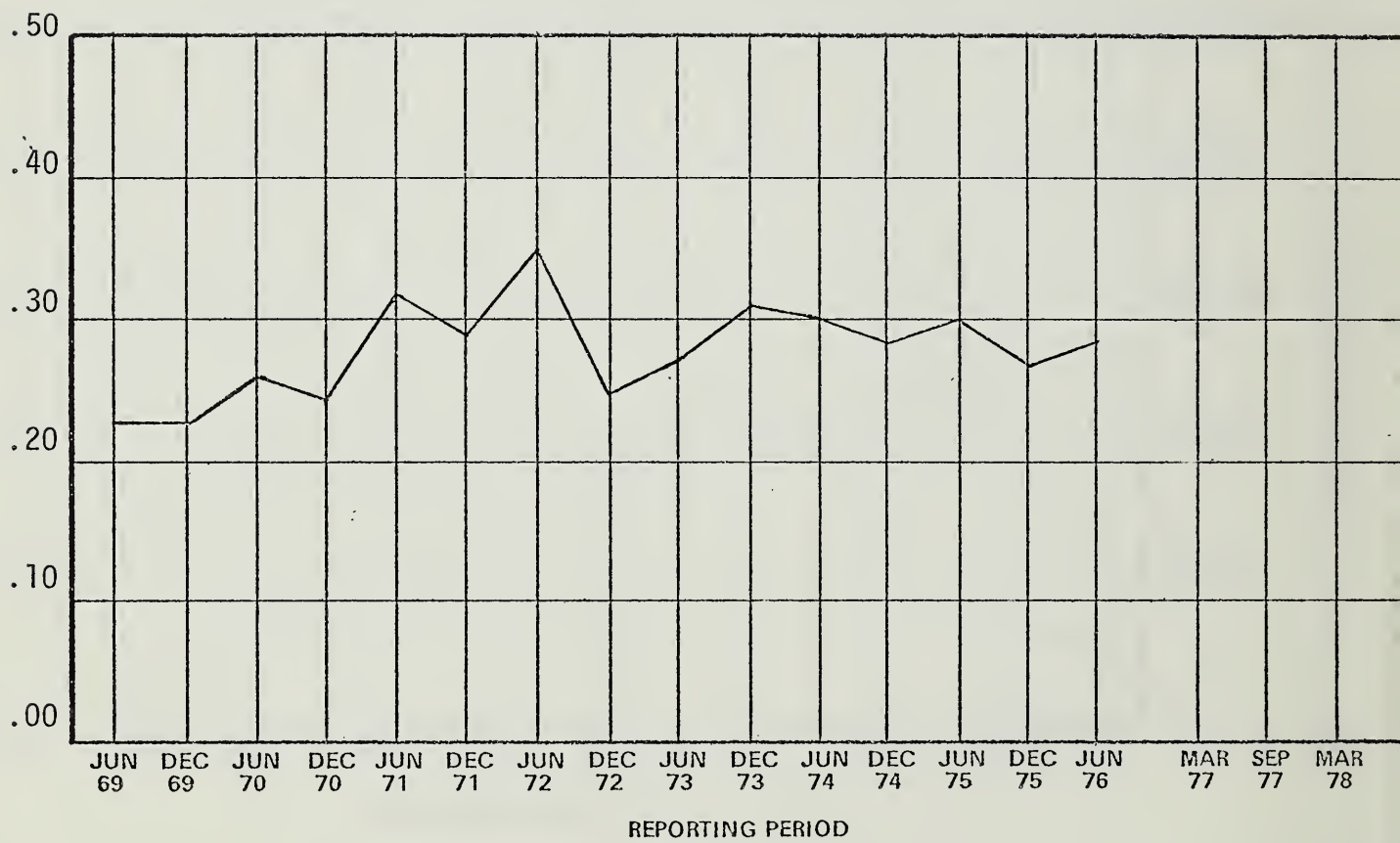


Figure 5

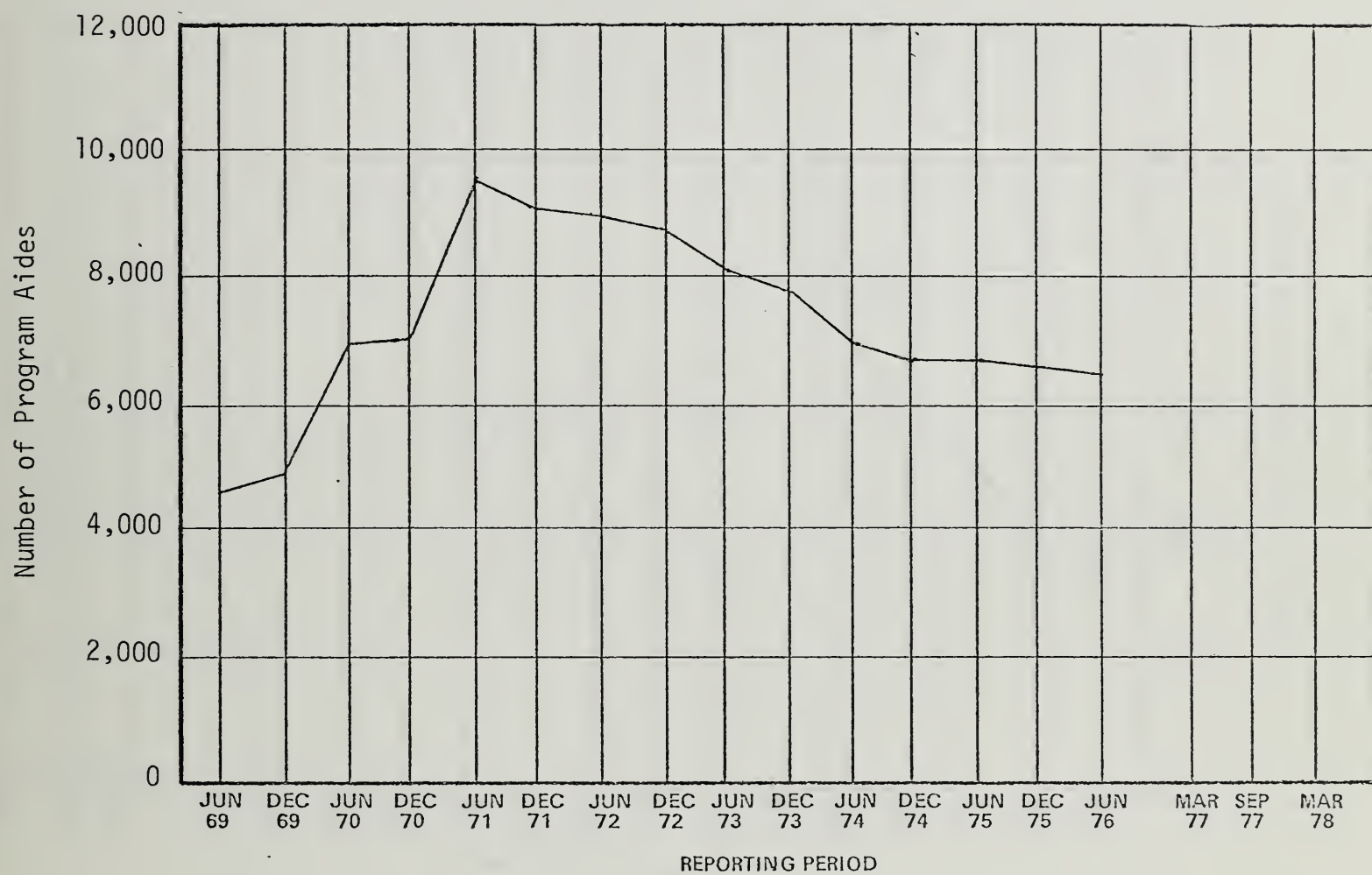


Figure 6

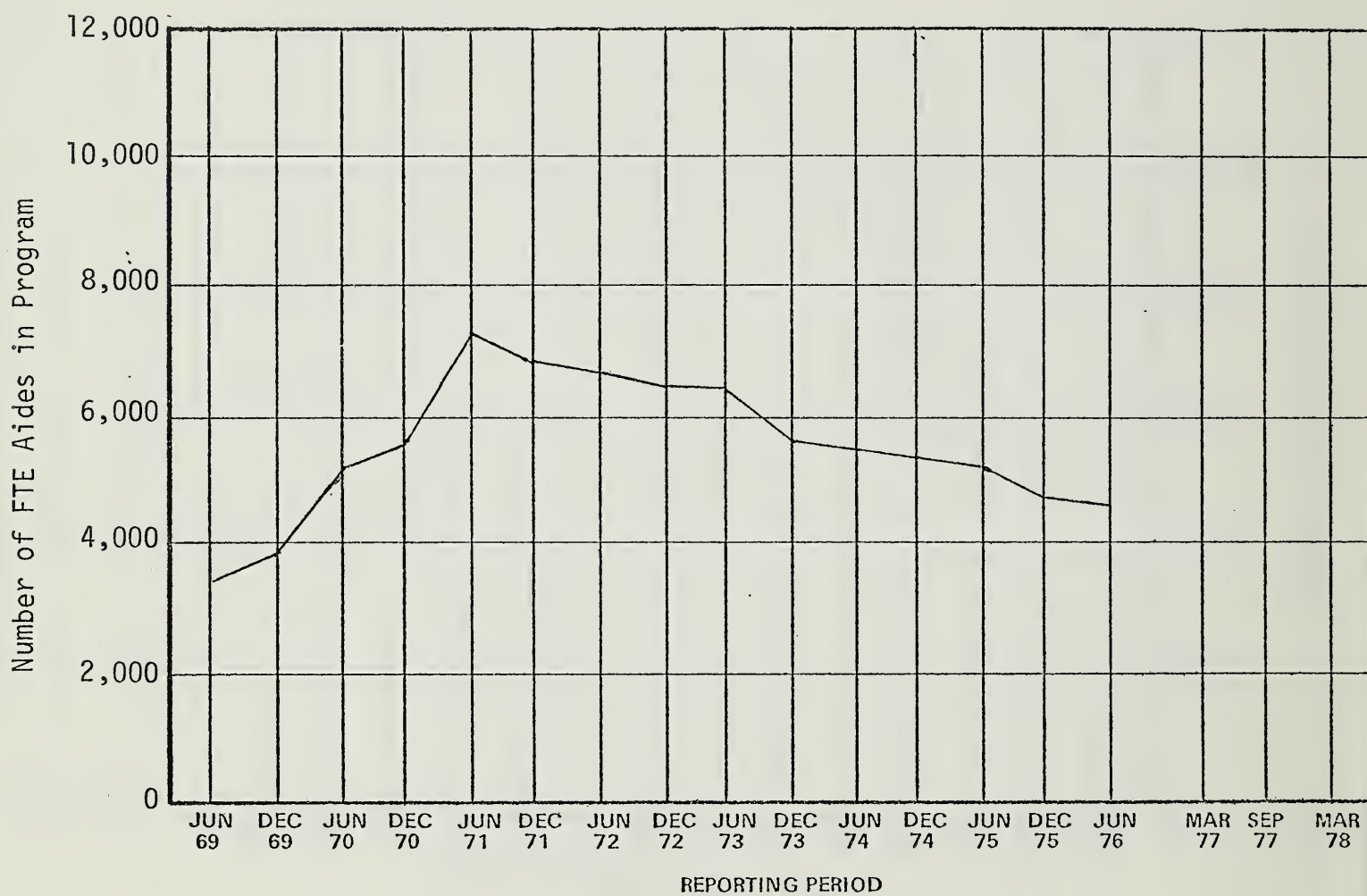


Figure 7

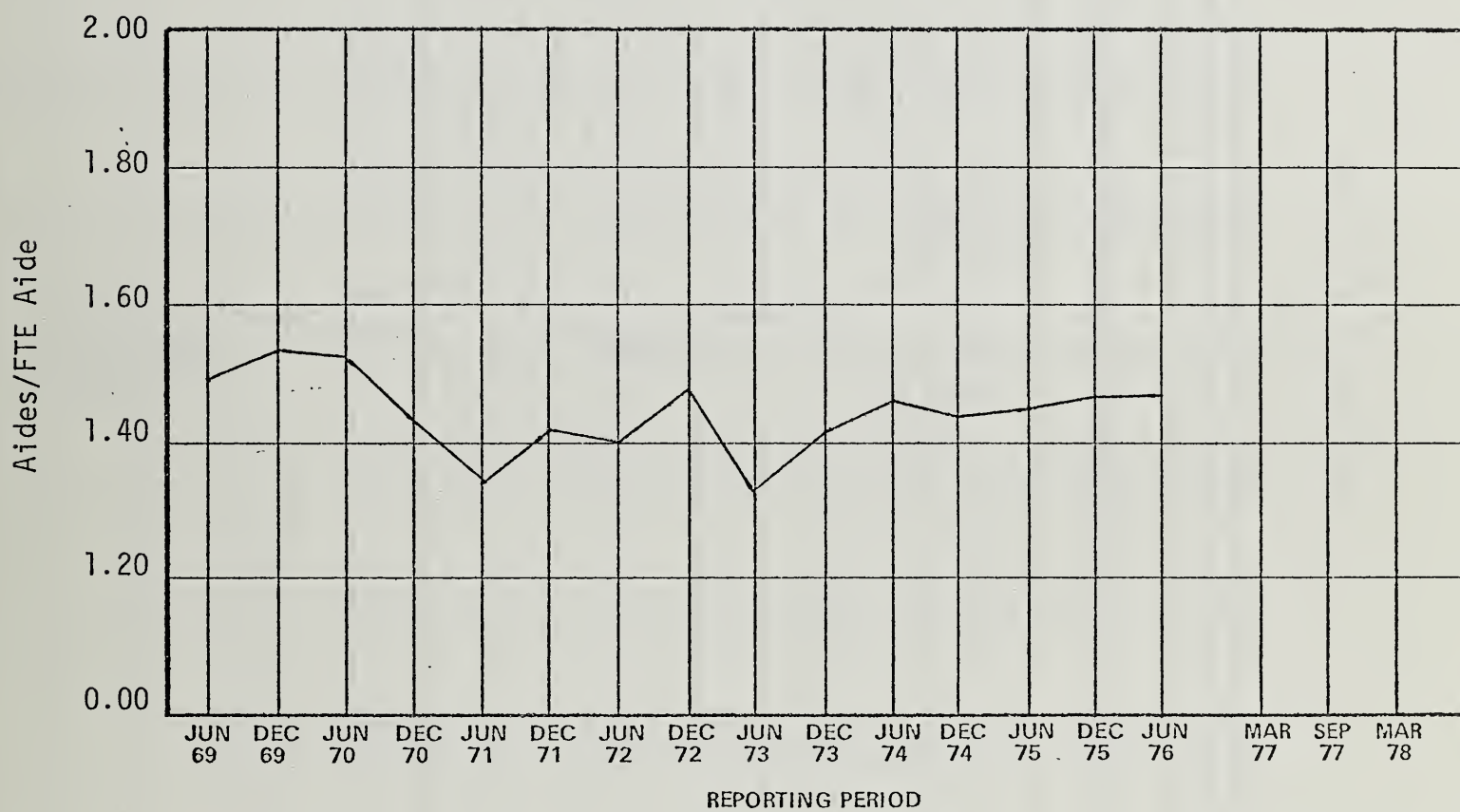


Figure 8

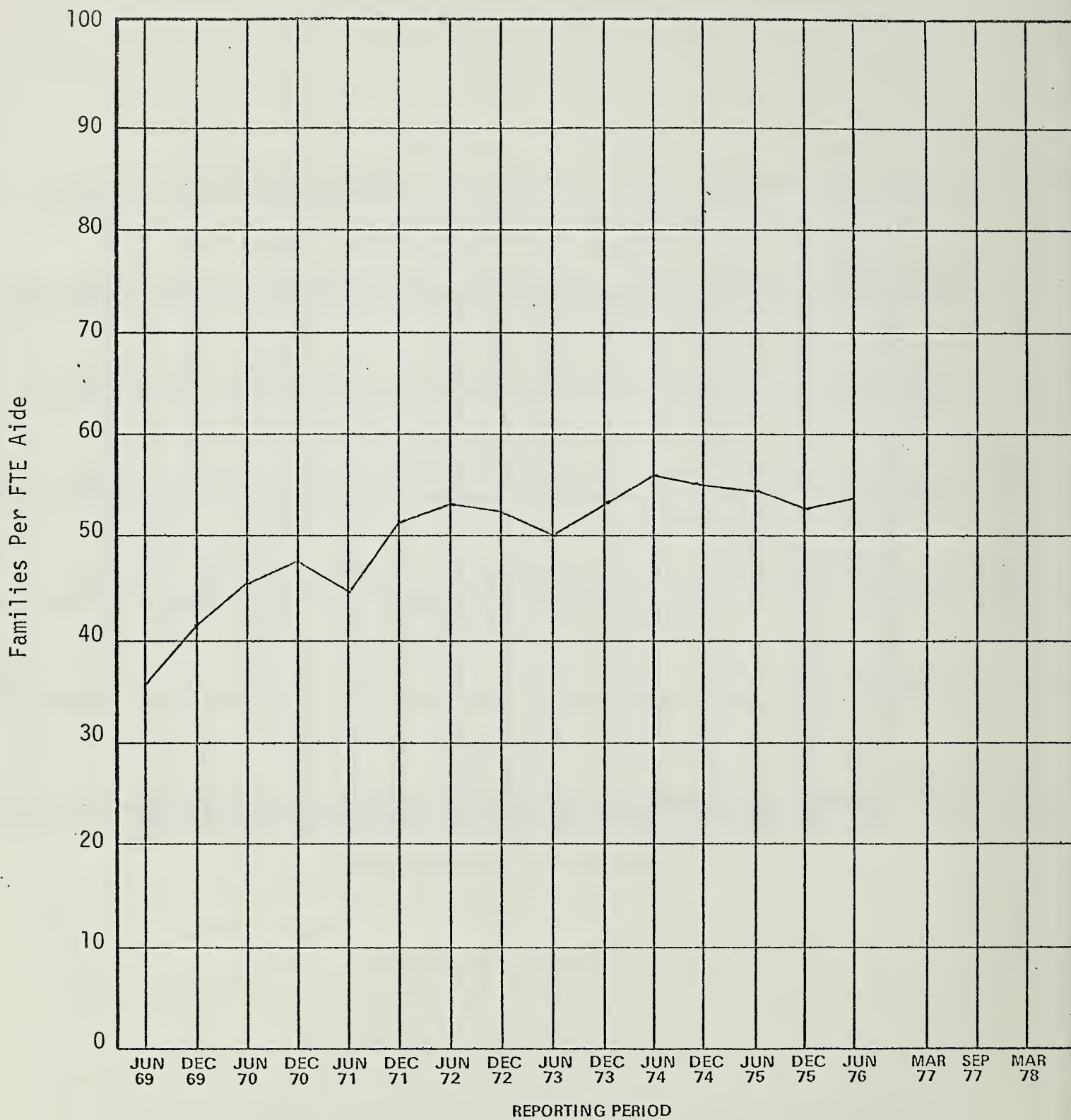


Figure 9

FTE Aide
Visits Per
Family

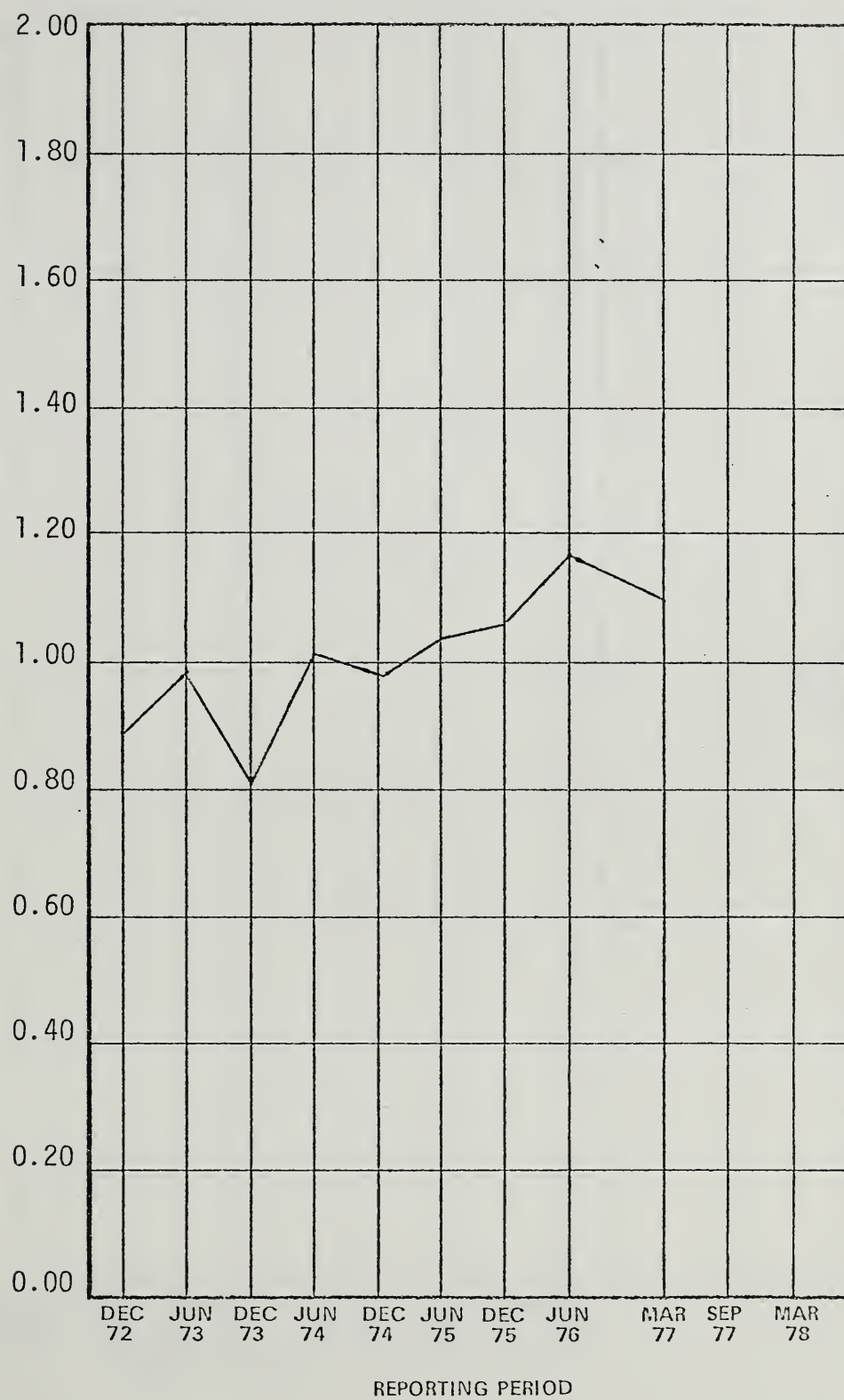


Figure 10

% of
Homemakers
Worked With
Individually

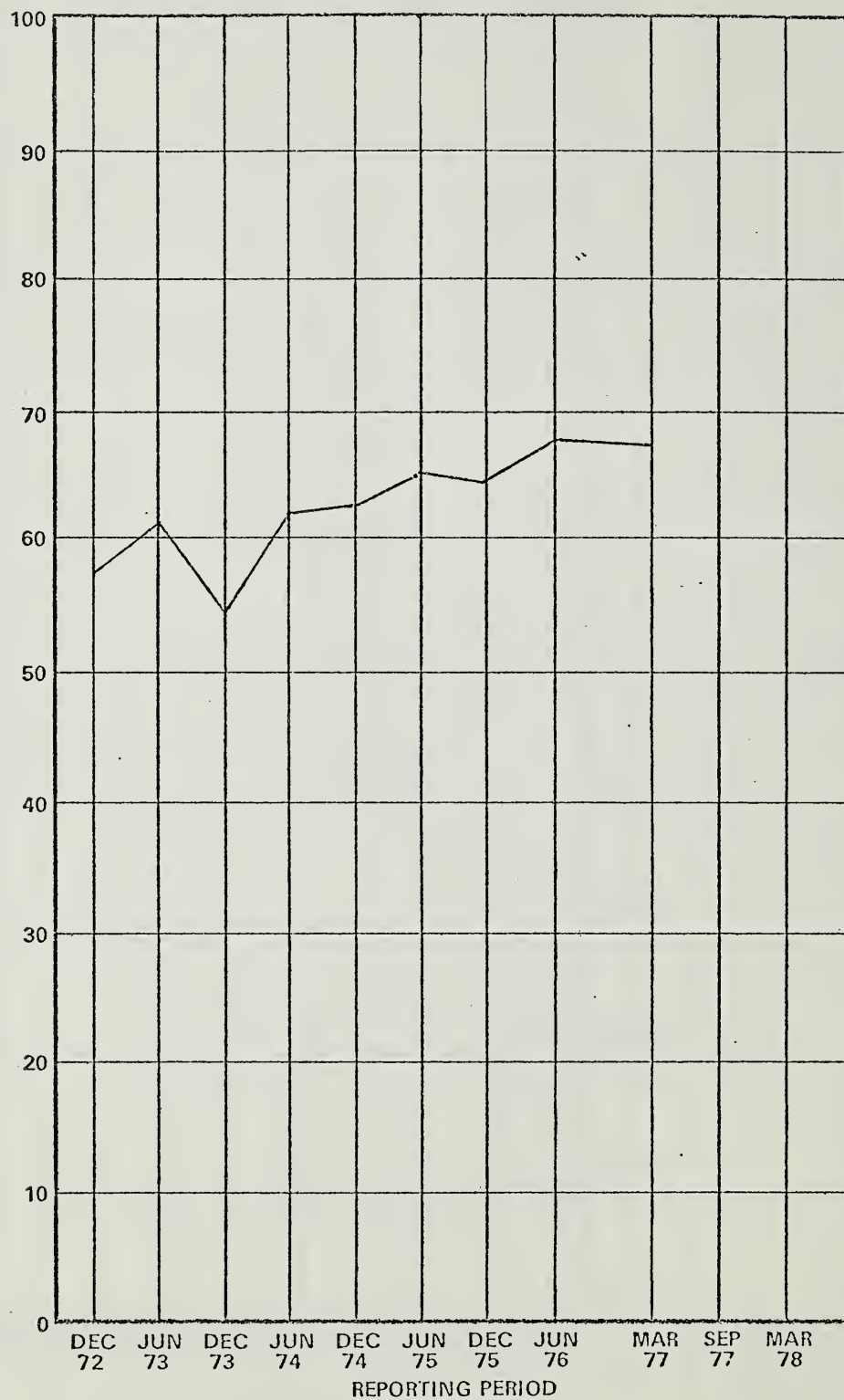


Figure 11

% of
Homemakers
Worked With
in Groups

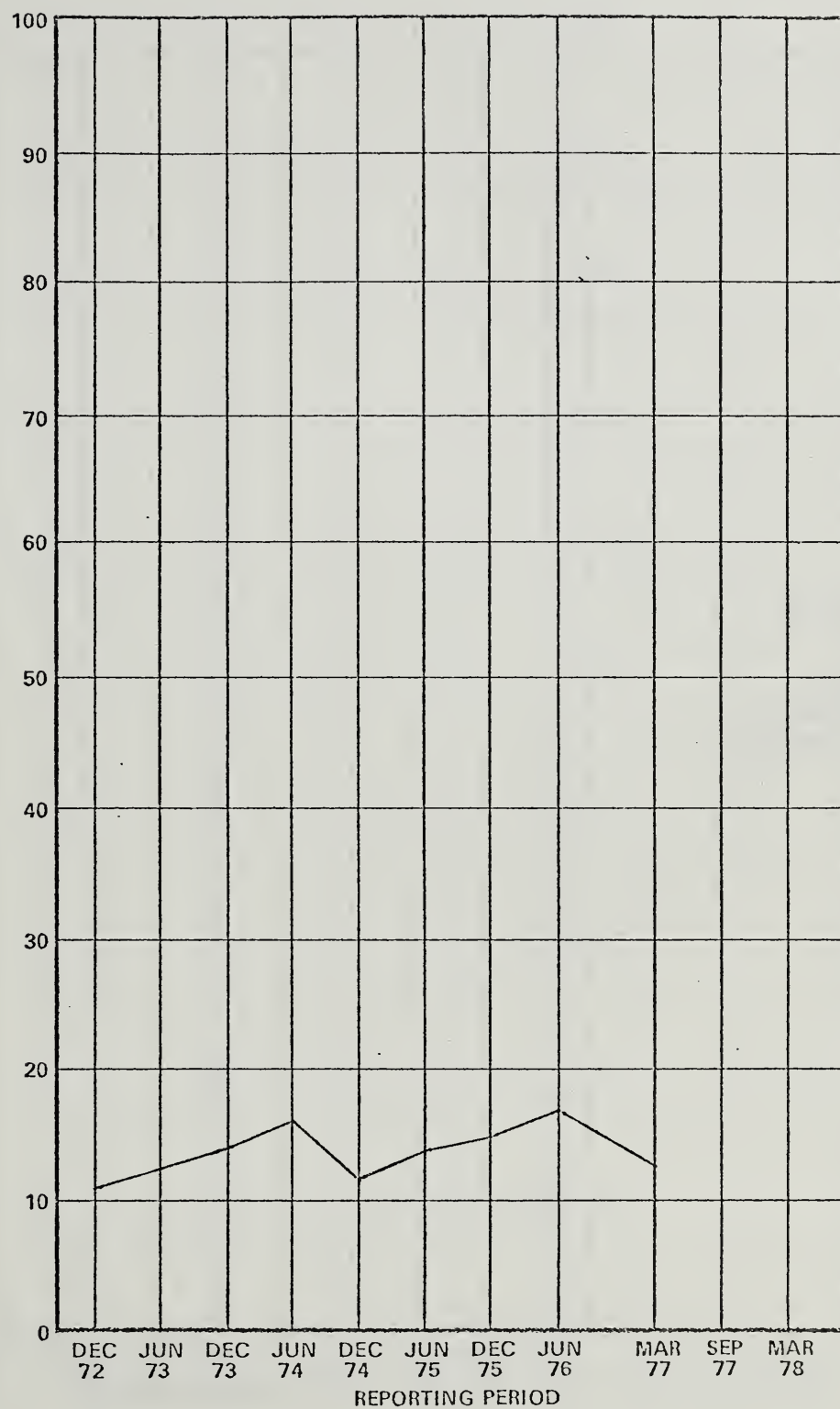


Figure 12

% of
Homemakers
Worked
With Both
Individually
and in Groups

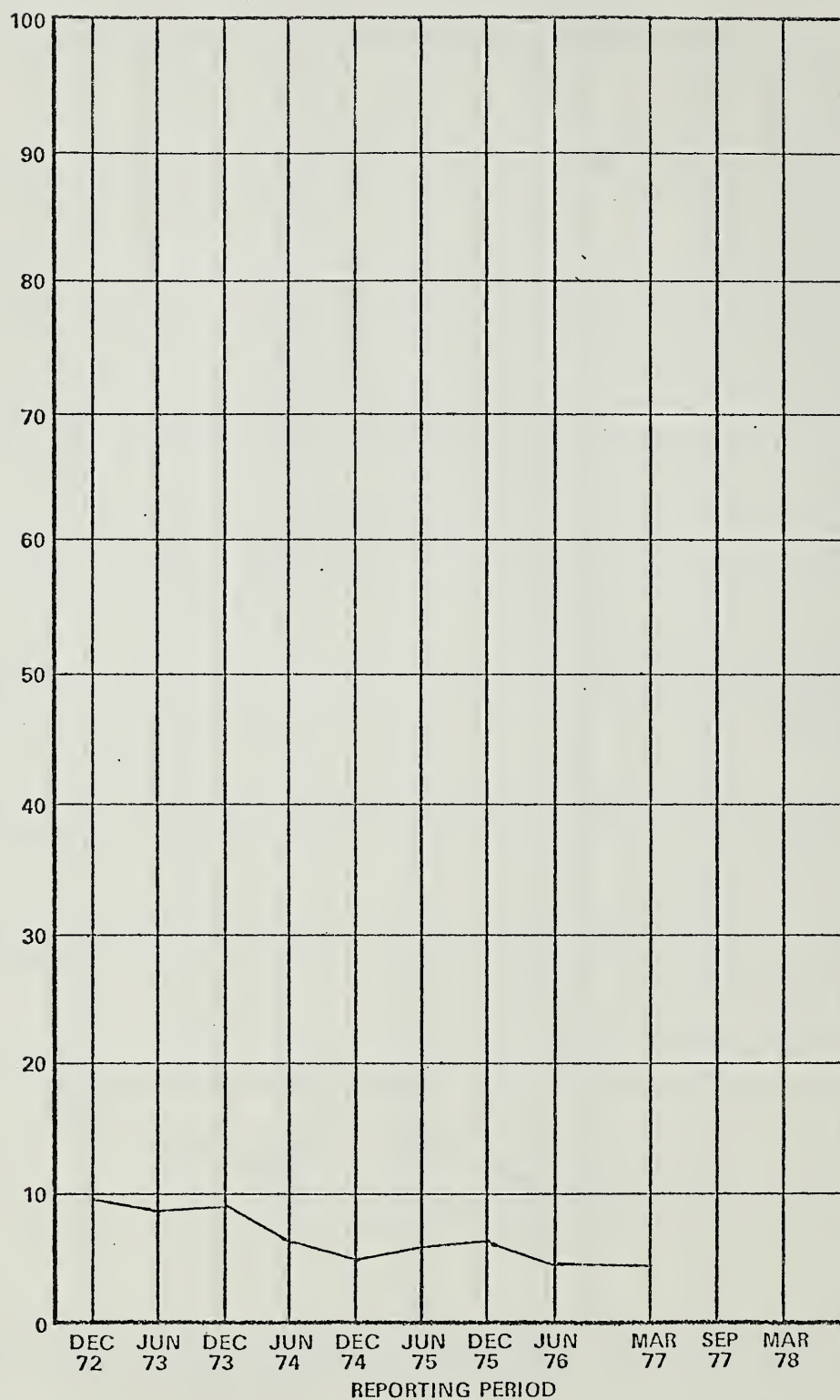


Figure 13

%
Homemaker
Turnover

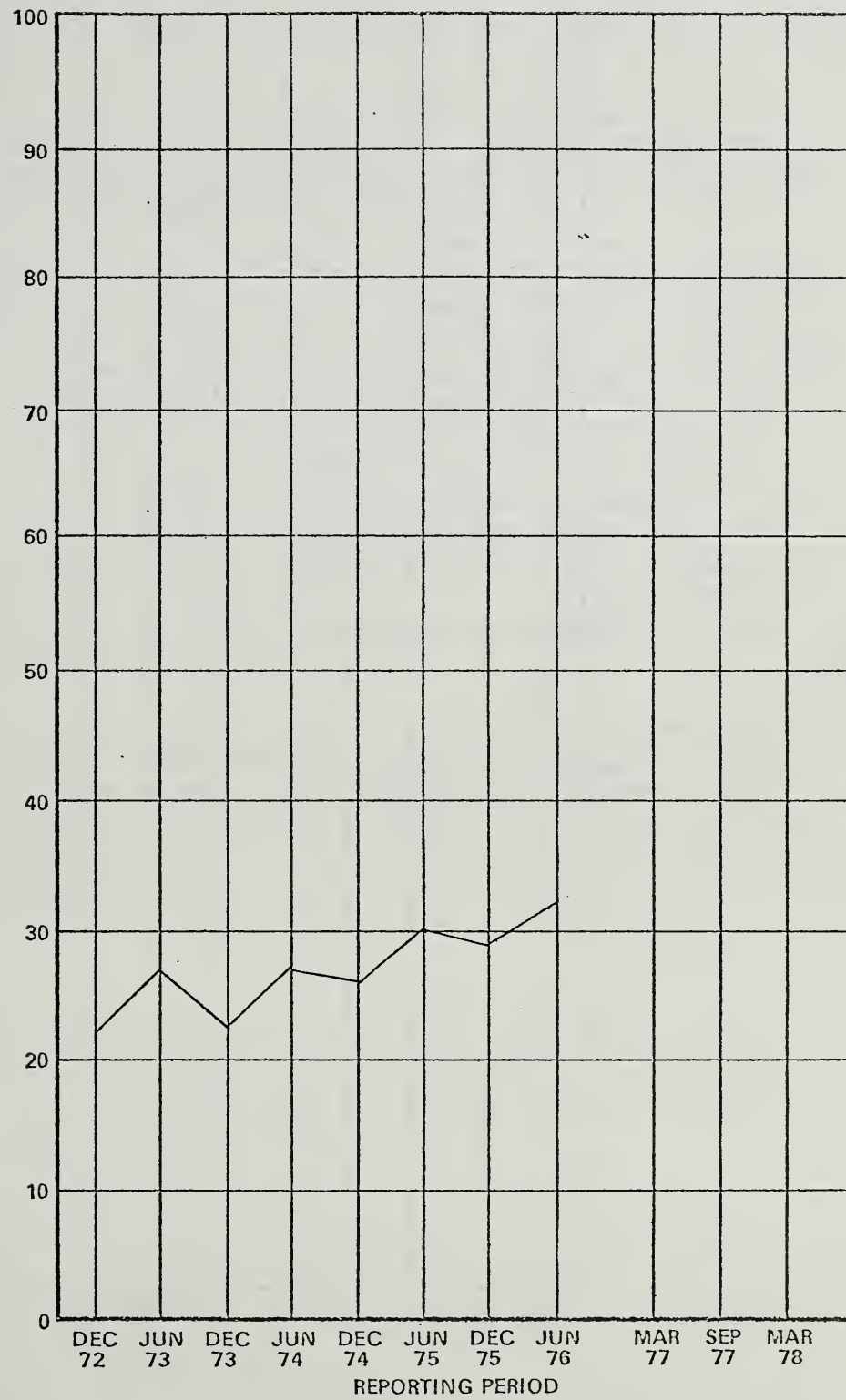


Figure 14

%
Aide
Turnover

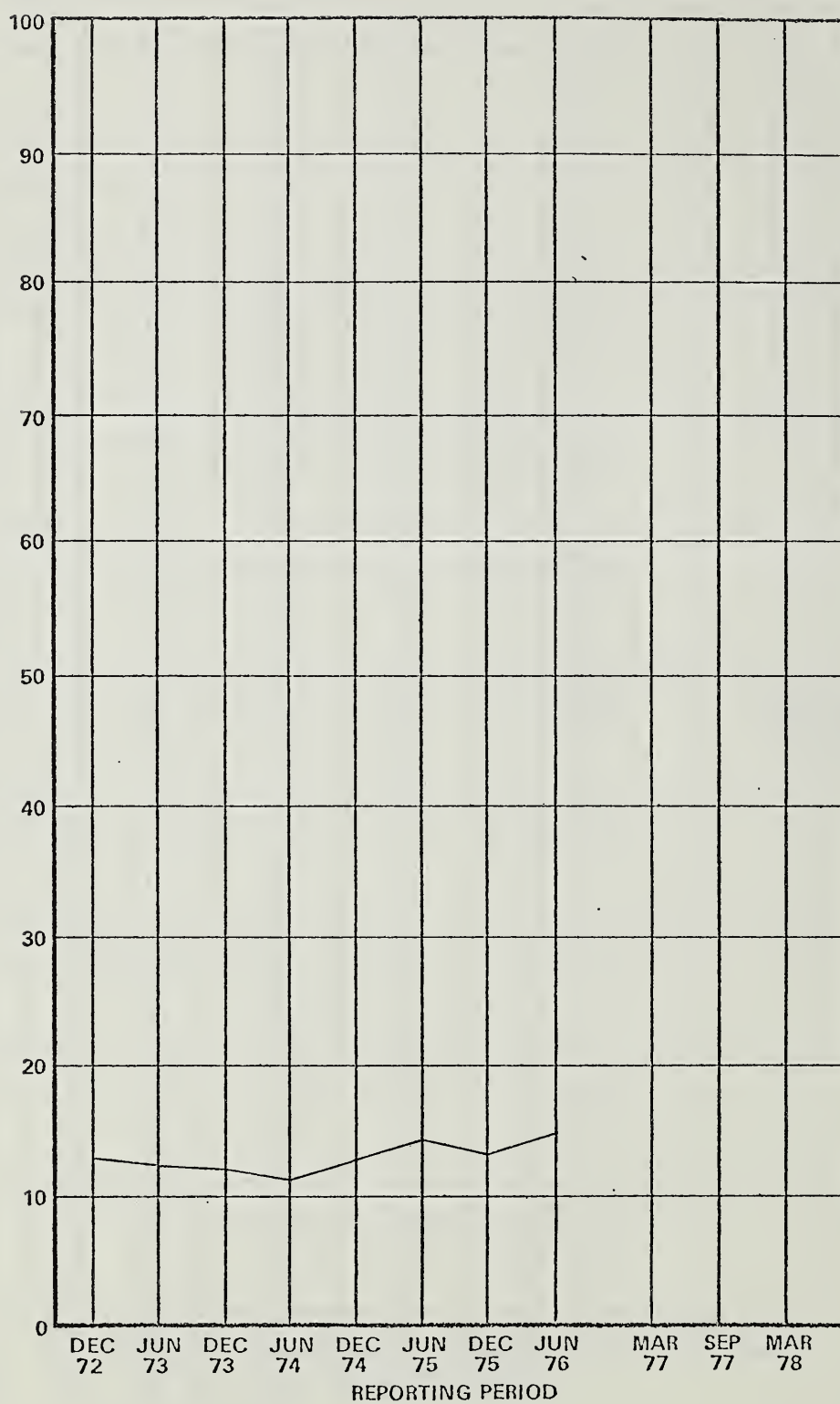


Figure 15

Program Targeting

1. HOMEMAKER AGE is measured by calculating the proportion of homemakers in three categories with respect to age: (1) under 25, (2) 25-55, and (3) over 55.

- a. STATUS: Currently (as of March 1977) about 22 percent of program homemakers are under 25 years of age; 63 percent are 25-55; and 15 percent are older than 55.
- b. TREND: The percentage of homemakers in the "under 25" years category has risen steadily since sample data collection was initiated in 1972 (Figure 16). From a low of 15.9 percent in 1972, the percentage in this category has increased at a rate of about a percent and a half net increase per year. Over the same time period, the percentage of homemakers in the "25-55 years" category has remained relatively constant at 62-63 percent of the total program family population (Figure 17). The percentage of homemakers in the "older than 55" category has been steadily dropping (Figure 18). From a peak of 21-22 percent in the period 1972-1974, the percentage of homemakers in the oldest age grouping has steadily declined to its current level of 15.2 percent.

This trend pattern indicates that EFNEP aides are working increasingly with homemakers who are likely to be in "high-risk" nutritional groups. Younger mothers are more likely to be pregnant, to have young children, and to be in a position to make a lasting influence on their families nutritional intake and habits.

2. FAMILY INCOME

- a. STATUS: As of March, 1977, the mean monthly family income for homemakers reporting income on Food Recall #1 was about \$320. The percentage of families within incomes of less than \$5,000/year was about 75 percent.
- b. TREND: The income of families as reported on FR #1 has risen steadily in the period December 1972 to March 1977 (Figure 19). Since this time interval included a period of high inflation, however, it is appropriate to investigate the actual purchasing power of the family income. When the family income is corrected for the cost of living index (1967 base), it becomes evident that the purchasing power of the average program family has been going steadily down. From a high of 199.36 in December 1972, the purchasing power of the average program family has dropped to 177.48 in March of 1977 (Figure 20). Another way of estimating the true meaning of program family income is to examine how program families are doing in comparison with the nation as a whole.

Again it is evident that EFNEP is continuing to select increasingly poor families: in the period of 1972-1974, the average program family income as measured on FR #1 was about 24-1/2 percent of the average national family income; by March of 1977, it had dropped to 22.4 percent (Figure 21).

The percentage of program families with incomes under \$5,000/year has been steadily dropping throughout the sample data collection period (Figure 22). In December, 1972 over 90 percent of program families had incomes less than \$5,000/yearly; by March of 1977, this figure had dropped to just under 75 percent. In comparing these figures with those of the nation as a whole, however, it is evident that program families are not keeping pace with the rest of the nation with respect to income. In December 1972, the proportion of program families earning less than \$5,000 per year was just over five and one-half times as large as the proportion of national families receiving incomes below that level. By March of 1977, this ratio had increased to 8.5:1 (Figure 23).

The evidence in the case of family income is clear: Program families currently entering the program are less well off financially than those who entered previously. This is true whether one looks at purchasing power or compares program families to the nation at large.

3. PERCENTAGE OF PROGRAM FAMILIES ON WELFARE

- a. STATUS: As of March, 1977 about one-third of all program families received welfare.
- b. TREND: After an initial rise in percentages of program families receiving welfare in the period December 1972-December 1973, there has been a consistent decline in welfare reciprocity (Figure 24). Since the receipt of welfare tends to be associated with poverty (and thus with the potential for poor nutrition), it appears that this is one area where EFNEP might better focus its targeting efforts. On the other hand, it is difficult to reconcile the welfare reciprocity data with the income information presented above. The data in the Unit and Sample Reports do not support a more detailed examination of the decline in welfare reciprocity.

4. FAMILY SIZE

- a. STATUS: As of March, 1977, the average EFNEP program family consisted of 4.3 persons.

- b. TREND: Since December 1972, the average EFNEP family size has declined relatively steadily from 4.6 persons to 4.3 persons (Figure 25). This decline parallels a similar decline in the size of U. S. families in general, though it is not known whether the rates of decline differ significantly. With the available information, however, it would appear that EFNEP could concentrate on large families if maximum program benefit is to be realized. It may be, however, that the small family size is caused by an increased concentration on younger homemakers who have not yet had an opportunity to raise a complete family.

5. HOMEMAKER EDUCATION

- a. STATUS: As of March 1977, 41.71 percent of program homemakers had an eighth grade education or less.
- b. TREND: The percentage of homemakers with an education level of eighth grade or lower has dropped steadily from the period December 1972-December 1973 to the present (Figure 26). It is probable that the reason for this decline is the emphasis on young homemakers (Figures 10, 11, and 12). Fewer older homemakers are participating in the program, and thus the education level may be altered by the fact that compulsory education statutes have been more vigorously enforced in recent years.

6. PERCENTAGE OF HOMEMAKERS RECEIVING FOOD STAMPS

- a. STATUS: As of March, 1977 about 47 percent of program families purchase USDA food stamps.
- b. TREND: The percentage of families receiving USDA Food Stamps has increased from 27.8 in December 1972 to a high of 50.96 in December of 1975 (Figure 27). Since then, the figures have dropped slightly to the March 1977 level of 47.24 percent.

7. PERCENTAGE OF HOMEMAKERS SCORING "1111+" ON PROGRAM ENTRY

- a. STATUS: As of March, 1977 about 53 percent of homemakers entering EFNEP score at least "1111+" on their initial food recall.
- b. TREND: The percentage of homemakers scoring at this level has been dropping very slowly over the last five years (Figure 28). This would indicate that, by design or by accident, new EFNEP homemakers are getting less adequate diets than did new homemakers in the past. Thus, the EFNEP homemaker target population is more in need of nutritional help than ever.

8. PERCENTAGE OF HOMEMAKERS SCORING "2244+" ON PROGRAM ENTRY

- a. STATUS: As of March, 1977, about 6 percent of new EFNEP homemakers were eating an adequate diet as defined by food consumption in the basic four food groups.
- b. TREND: As with the "1111+" category, scores on FR #1 indicate that the percentage of new program homemakers receiving adequate diets has been slowly declining over the past five years (Figure 29). Again, it is evident that EFNEP is working with a population which is more in need of nutritional help than in the past.

9. PERCENTAGE OF FAMILY MEMBERS UNDER 19 YEARS OLD

- a. STATUS: As of March, 1977, about 57 percent of program family members were under 19 years of age.
- b. TREND: The percentage in this category has varied between 53 and 58 over the period 1972-1977; no significant trend was, however, noted (Figure 30).

10. PERCENTAGE OF FAMILY MEMBERS UNDER 19 YEARS OF AGE WHO ARE IN SCHOOL

- a. STATUS: As of March, 1977, about 69 percent of family members under 19 were in school.
- b. TREND: The percentage has varied between 63.5 and almost 70; no significant trend was noted (Figure 31).

11. PERCENTAGE OF CHILDREN IN SCHOOL WHO WERE IN THE SCHOOL LUNCH PROGRAM

- a. STATUS: As of March, 1977, about 88.5 percent of the school children in program families were in school lunch programs.
- b. TREND: The trend in this category is moderately strong and indicative of an irregular increase of somewhat over one percentage point per year in percentage of children in school lunch programs. It is unclear whether this increase is the result of:
 - (1) A general (nationwide) increase in the percentage of school age children in school lunch programs.
 - (2) Active aide selection of families with large percentages of children in school lunch programs.
 - (3) Influence of the aides in informing program families about school lunch programs.

(4) Other factors.

or some combination of the above (Figure 32).

12. PERCENTAGE OF FAMILIES RECEIVING DONATED FOODS

- a. STATUS: Currently, almost no program families receive donated foods (.003% as of March, 1977).
- b. TREND: As the Donated Foods Program was phased out, fewer and fewer program families participated; it is anticipated that this percentage will remain at essentially 0 in the foreseeable future (Figure 33).

13. ETHNIC BACKGROUND OF HOMEMAKERS

- a. STATUS: As of the reporting period of June, 1976, the percentages of program homemakers in ethnic categories are as follows:

(1) White	---	37.98%	(Figure 34)
(2) Black	---	44.24%	(Figure 35)
(3) Spanish Sur.	---	15.51%	(Figure 36)
(4) American Ind.	---	1.36%	(Figure 37)
(5) Oriental	---	.39%	(Figure 38)
(6) Other	---	.49%	(Figure 39)

The data for March of 1977 do not appear to be strictly comparable to the previous data, probably because these are sample data as opposed to the unit data from other reporting periods. For March, 1977 data, the percentages are as follows:

(1) White	---	27.05%	(Figure 34)
(2) Black	---	47.23%	(Figure 35)
(3) Spanish Sur.	---	24.15%	(Figure 36)
(4) American Ind.	---	0.97%	(Figure 37)
(5) Oriental	---	0.38%	(Figure 38)
(6) Other	---	0.20%	(Figure 39)

- b. TREND: The trend analyses performed did not include the March, 1977 data because they were not consistent with the other information. The trends were as follows:
 - (1) White...the percentage of white homemakers has been slowly increasing at a rate of about .6 percentage points per year (Figure 34).
 - (2) Black...no significant trend (Figure 35).
 - (3) Spanish surname...no significant trend (Figure 36).

- (4) American Indian...no significant trend (Figure 37).
- (5) Oriental...increasing at about .1 percentage points per year (Figure 38).
- (6) Other...increasing at about .02 percentage points per year (Figure 39).

14. ETHNIC BACKGROUND OF AIDES

- a. STATUS: As of the reporting period of June 1976, the percentage of program aides in ethnic categories are as follows:

(1) White	---	46.54%	(Figure 40)
(2) Black	---	39.65%	(Figure 41)
(3) Spanish Sur.	---	11.64%	(Figure 42)
(4) American Ind.	---	1.33%	(Figure 43)
(5) Oriental	---	0.29%	(Figure 44)
(6) Other	---	0.52%	(Figure 45)

as with homemaker ethnic distribution, the data for March, 1977 do not appear to have been derived in the same manner as those from previous reporting periods. The percentages for March 1977 are as follows:

(1) White	---	32.91%	(Figure 40)
(2) Black	---	47.09%	(Figure 41)
(3) Spanish Sur.	---	18.23%	(Figure 42)
(4) American Ind.	---	1.39%	(Figure 43)
(5) Oriental	---	0.20%	(Figure 44)
(6) Other	---	0.13%	(Figure 45)

- b. TREND: Again, trend data do not include March 1977 data. The patterns are as follows:

- (1) White: No significant trend (Figure 40)
- (2) Black: No significant trend (Figure 41)
- (3) Spanish surname: No significant trend (Figure 42)
- (4) American Indian: Percentage decreasing at an average of .14 percentage points per year (~10%/year), on an average (Figure 43).
- (5) Oriental: No significant trend (Figure 44).
- (6) Other: Increasing at an average of .06 percentage points per year (~20%/year), on an average (Figure 45).

15. RATIOS OF % AIDES TO % HOMEMAKERS IN VARIOUS ETHNIC GROUPS

- a. STATUS: [NOTE: FIGURES OVER 1 INDICATE A RELATIVE OVERPROPORTION OF AIDES: FIGURES UNDER 1 INDICATE A RELATIVE OVERPROPORTION OF HOMEMAKERS]

The ratios of proportions of aides to proportions of homemakers in various ethnic categories as of June 1976 are as follows:

(1) White	---	1.23:1	(Figure 46)
(2) Black	---	0.90:1	(Figure 47)
(3) Spanish Sur.	---	0.75:1	(Figure 48)
(4) American Ind.	---	0.98:1	(Figure 49)
(5) Oriental	---	0.74:1	(Figure 50)
(6) Other	---	1.06:1	(Figure 51)

Again the data for March 1977 do not appear to be comparable for those from previous years. These data are as follows:

(1) White	---	1.21:1	(Figure 46)
(2) Black	---	1.00:1	(Figure 47)
(3) Spanish Sur.	---	0.75:1	(Figure 48)
(4) American Ind.	---	1.43:1	(Figure 50)
(5) Oriental	---	0.53:1	(Figure 50)
(6) Other	--	0.65:1	(Figure 51)

- b. TREND: The trend data do not include March 1977 data.

- (1) White: There is a moderate downward trend in this ratio, with trend values decreasing about 0.016 points per year over the period December 1972 to June 1976. This indicates that white aides tend to be overrepresented when compared with the number of white homemakers in EFNEP, but that this overrepresentation has been very slowly decreasing over the past several years (Figure 46). The data for March 1977 are not markedly different from those of earlier reporting periods. The reason for this consistency in the light of data from the other ethnic groups are unknown.
- (2) Black: There has been no significant trend, although the underrepresentation of black aides seems to have been reduced somewhat in the period December 1974 to June 1976. At any rate, the latest observation (June 1976) is the most equitable of any period in the reported history of EFNEP. If the March 1977 data are accepted as valid, then the proportion of black aides to black homemakers is precisely appropriate (Figure 47).
- (3) Spanish Surname: No significant trend (Figure 48), Spanish-surname aides have been underrepresented by about 20-25 percent throughout the reported history of EFNEP. The March 1977 figure is entirely consistent with this observation.

- (4) American Indian: During the period December 1972 to June 1976, the ratio for this ethnic group has moved from 20-30 percent overrepresentation to a ratio indicative of accurate, proportional aide: homemaker representation (Figure 49). The March 1977 data would indicate a move back to significant overrepresentation.
- (5) Oriental: A downward trend has moved the ratio for this ethnic group from substantial overrepresentation of Oriental aides to substantial underrepresentation (Figure 50). The March 1977 figures are indicative of underrepresentation.
- (6) Other: A moderate trend towards an increase in this ratio is obscured by high variability. In general, the figures indicate relatively fair representation (Figure 51).

A few points of interpretation are in order here:

- (1) The white, black, and Spanish-surname ethnic groups make up roughly 98 percent of the total of EFNEP program families. The three remaining ethnic categories are, therefore, quite small in terms of both percentage of families and absolute number of families represented. A turnover of a relative handful of aides in these ethnic categories can, therefore, have a profound effect on the aide: homemaker ratio. One would expect that the ratios for these smaller ethnic groups would be highly inconsistent from reporting period to reporting period; this does indeed seem to be the case. The figures for the three largest ethnic groups, however, are less difficult to explain as mere statistical artifacts. The data strongly indicate that white aides are overrepresented as compared to the proportion of white program homemakers by about 20 percent, and that Spanish-surname aides are underrepresented by an equivalent amount. The status of the ratio for black aides is less clear because of the March 1977 data. There is a possibility, however, that black aides are somewhat underrepresented.
- (2) The reasons for the inappropriate aide: homemaker ratios observed are not clear. It would appear, however, that EFNEP has the power at the Unit level to control these ratios by selective hiring of aides of particular ethnic backgrounds to counteract natural aide attrition. An aid to identifying particular problem units or states might be the institution of a monitoring system using data such as those presented above. This course of action might become more advisable if subsequent analyses indicate that inequalities in aide: homemaker ratios are associated with decreased program effectiveness and/or efficiency.

16. ETHNIC BACKGROUND OF VOLUNTEERS

a. STATUS: As of June 1976.

(1) White	---	54.90%	(Figure 52)
(2) Black	---	36.53%	(Figure 53)
(3) Spanish Sur.	---	6.66%	(Figure 54)
(4) American Ind.	---	1.03%	(Figure 55)
(5) Oriental	---	0.35%	(Figure 56)
(6) Other	---	0.49%	(Figure 57)

- b. TREND: There appears to be no significant trend in any of these ethnic categories except for "other," which has increased in percentage over the last 5 years.

17. ETHNIC BACKGROUND OF YOUTH

a. STATUS: As of June, 1976.

(1) White	---	50.63%	(Figure 58)
(2) Black	---	38.06%	(Figure 59)
(3) Spanish Sur.	---	8.87%	(Figure 60)
(4) American Ind.	---	1.52%	(Figure 61)
(5) Oriental	---	0.34%	(Figure 62)
(6) Other	---	0.56%	(Figure 63)

- b. TREND: As of June, 1976, the following trends appear:

- (1) White youth: There is a pronounced upward trend at the rate of about 1-1/2 percentage points per year; this implies that greater proportion of white youth have been entering EFNEP. There appears to be a definite cyclical pattern, with a relatively greater proportion of white youth participating in the summer (Figure 58). The reason for this cycle is unclear; it runs directly counter to that for black youth (Figure 59).
- (2) Black youth: No pronounced trend is noticeable; the proportion of black youth participating in EFNEP has not appreciably changed over the four year reporting interval (Figure 59). There is, however, a definite cyclical pattern; relatively more black youth participate in the summer than in the winter.
- (3) Spanish-surname youth: There is a slight downward trend at a rate of slightly under one percentage point per year (Figure 60).
- (4) American Indian youth: A slow but definite downward trend through December, 1975 was interrupted by a pronounced upswing in June, 1976 (Figure 61).

- (5) Oriental youth: A generally downward trend over the 1972-1976 period has been countered by a slight rise in the 1973-1976 period (Figure 62).
- (6) "Other" youth: There has been a fairly pronounced downward trend in the proportion of "other" youth participating in the EFNEP program, at the rate of just under 2/10 of a percentage point per year (Figure 63). It is possible that this trend results from increasingly accurate record-keeping on the part of EFNEP personnel; this hypothesis is not testable with the printout data, since the distribution of ethnic categories other than the five specified is unknown.

18. RATIO OF PROPORTION OF VOLUNTEERS TO PROPORTION OF YOUTH

[NUMBERS GREATER THAN 1 INDICATE A RELATIVE OVERREPRESENTATION OF VOLUNTEERS IN THE ETHNIC CATEGORY: THOSE LESS THAN 1 INDICATE A RELATIVE UNDERREPRESENTATION OF VOLUNTEERS IN THE ETHNIC CATEGORY]

a. STATUS: As of June 1976.

(1) White	---	1.08:1	(Figure 64)
(2) Black	---	.96:1	(Figure 65)
(3) Spanish Sur.	---	.75:1	(Figure 66)
(4) American Ind.	---	.68:1	(Figure 67)
(5) Oriental	---	1.03:1	(Figure 68)
(6) Other	---	.88:1	(Figure 69)

b. TREND:

- (1) White: There is a definite trend towards more equitable representation (from 1.27:1 in December 1972 to 1.08:1 in June 1976) (Figure 64).
- (2) Black: No definite trend appears, but there is a relatively equitable representation (Figure 65).
- (3) Spanish Surname: There is a moderate upward trend, but moderate underrepresentation continued through June 1976 (Figure 66).
- (4) American Indian: No definite trend; appears there is high variability across reporting period (Figure 67).
- (5) Oriental: There is an upward trend to current equitable representation (Figure 68).
- (6) Other: There is a definite upward trend, but variability is high (Figure 69).

In general, these patterns indicate a much more equitable distribution than do the homemaker/aide ratios presented earlier (Figure 64 through Figure 69) except for Spanish-surname youth/volunteers. The underrepresentation of Spanish-surname youth and homemakers is not directly amenable to analysis through the printout data; two obvious hypotheses are:

1. High turnover rates among Spanish-surname aides and volunteers.
2. Difficulties in assigning Spanish-surname individuals to ethnic categories.

Investigation of these hypotheses is beyond the scope of the current effort.

19. AGE RANGES OF HOMEMAKERS' CHILDREN

a. STATUS: As of March, 1977.

(1) GIRLS:

(a) less than 9 years	--	28.92%	(Figure 70)
(b) 9-13 years	--	58.60%	(Figure 71)
(c) more than 14 years	--	12.47%	(Figure 72)

(2) BOYS:

(a) less than 9 years	--	33.59%	(Figure 73)
(b) 9-13 years	--	57.10%	(Figure 74)
(c) more than 14 years	--	9.31%	(Figure 75)

b. TREND: Definite downward trend for both boys and girls in 14 and over category (Figures 72 and 75). Definite upward trend for 9-13 age group in both sex categories. These trends probably the result of younger homemakers.

20. VOLUNTEERS LEVEL AND DISTRIBUTION

a. STATUS: As of June 1976, there are about 23,000 total volunteers in EFNEP. (Figure 76); of these, about 4,100 (19 percent) are working only with adults (Figure 77 and 78); just over 16,000 (72 percent) are working only with youth (Figures 79 and 80); and about 23,000 (10 percent) are working with both youth and adults (Figures 81 and 82).

b. TREND:

(1) Total Volunteers: There is no definite trend; the total number of volunteers has remained relatively constant over the course of the Program. There is, however, a pronounced

cycle, with the number of volunteers in the summer reporting period being substantially higher than that in the winter periods (Figure 76).

- (2) Volunteers per program family: There is a definite upward trend in the number of volunteers per program family (Figure 83). This indicates a focus by EFNEP making volunteers a more significant part of the overall EFNEP effort.
- (3) Volunteers working only with adults: There has been a moderate increase in the number of volunteers working only with adults, with the rate of increase being about 200 volunteers per year (Figure 77). This upward trend is also evident, though less strongly, in the percentage of volunteers working only with adults; here again, the summer/winter cycle is evident, though it is reversed from that evidenced in the "total volunteer" category (Figure 76).
- (4) Volunteers working only with youth: There is no definite trend in either the number or percentage of this class of volunteers (Figures 79 and 80). The summer/winter cycle is, however, quite pronounced. At least two factors may cause this cyclical behavior, including:
 - (a) Greater EFNEP participation by youth during the summer months.
 - (b) Greater availability of volunteers during the summer months.
- (5) Volunteers working with both youth and adults: A slight downward trend is evident in the number of volunteers in this class (Figure 81); no such trend appears in the percentage (Figure 82). The summer/winter cycle is less pronounced, than in other volunteer classes, but still somewhat in evidence.

21. EFNEP YOUTH LEVEL AND DISTRIBUTION

- a. STATUS: As of June 1976, about 215,000 total youth were involved in the EFNEP program (Figure 84). The ratio of total youth to the number of program families stood at about .85:1 (Figure 85), while the ratio of youth from program families to youth from nonprogram families stands at just under .6:1 (Figure 86).
- b. TREND:
 - (1) Total youth: No distinct trend in the number of total EFNEP youth is evident; the level has been holding relatively constant just over the 200,000 over the 1972-1976 period (Figure 84). Again, however, a pronounced summer/winter

cycle, although this cycle has flattered somewhat in the last four reporting periods. This may be evidence that EFNEP is managing to hold a core of youth in program participation over the entire year. This hypothesis is, however, not directly testable using the printout data.

- (2) Youth per program family: The strong upward trend in this ratio (Figure 85) indicates that EFNEP is increasing its emphasis on youth in the face of declining real dollars for program activities.
- (3) Source of EFNEP youth: The number of youth from program families has been dropping slowly (about 4,000 participants per year) (Figure 86), while the number from nonprogram families has been increasing at about 4,500 per year (Figure 87). The ratio of youth from program families to youth from nonprogram families has thus been steadily dropping (Figure 88). The number of youth from program families per program family has been rising slowly (Figure 89), while the analogous figure for nonprogram families has been rising even faster (Figure 90). It appears, therefore, that EFNEP is maintaining (even slightly increasing) its effectiveness in recruiting youth from program families, while substantially increasing its interaction with youth from families not formally enrolled in EFNEP.

% of
Homemakers
Less Than 25

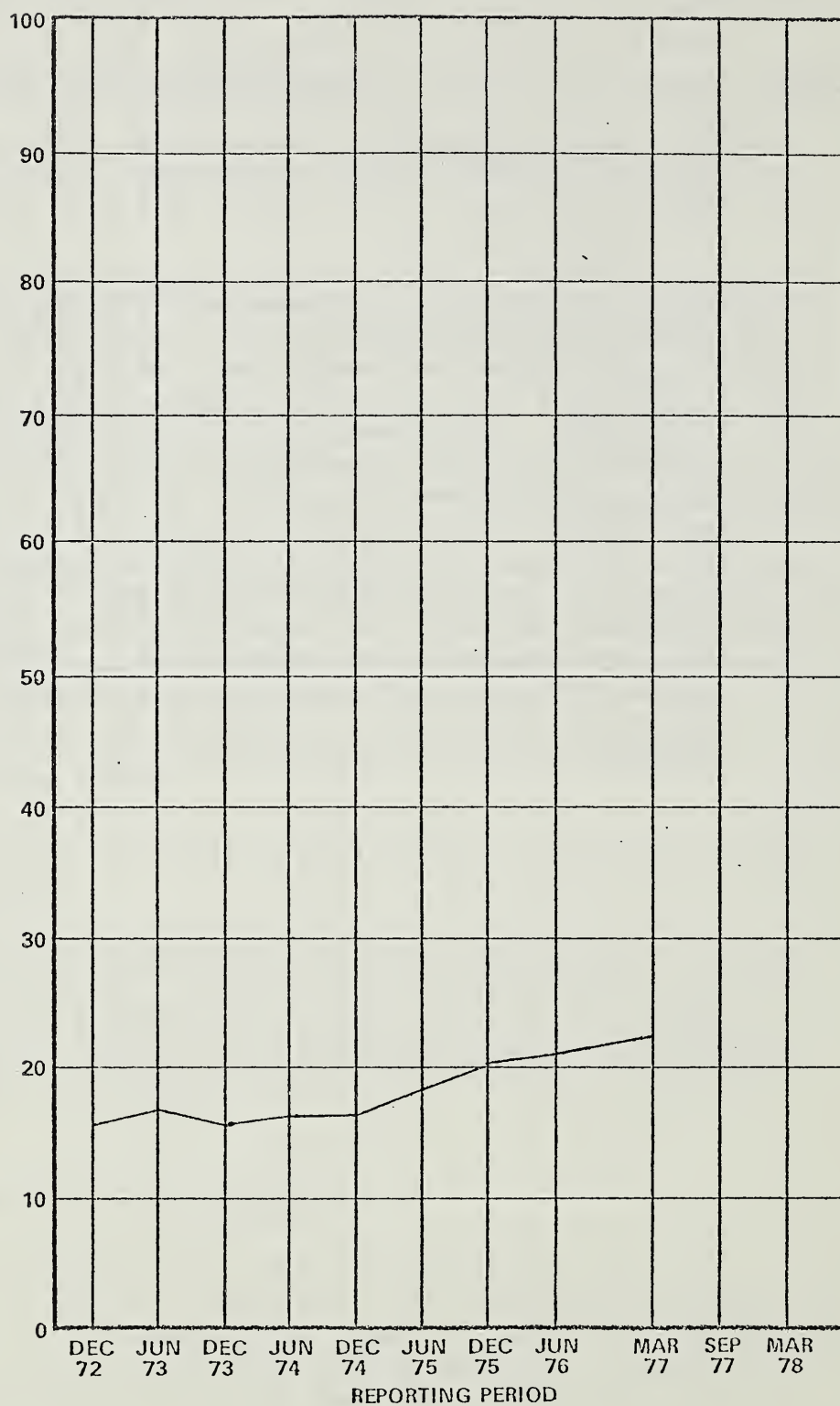


Figure 16

% Homemakers
25-55 Years

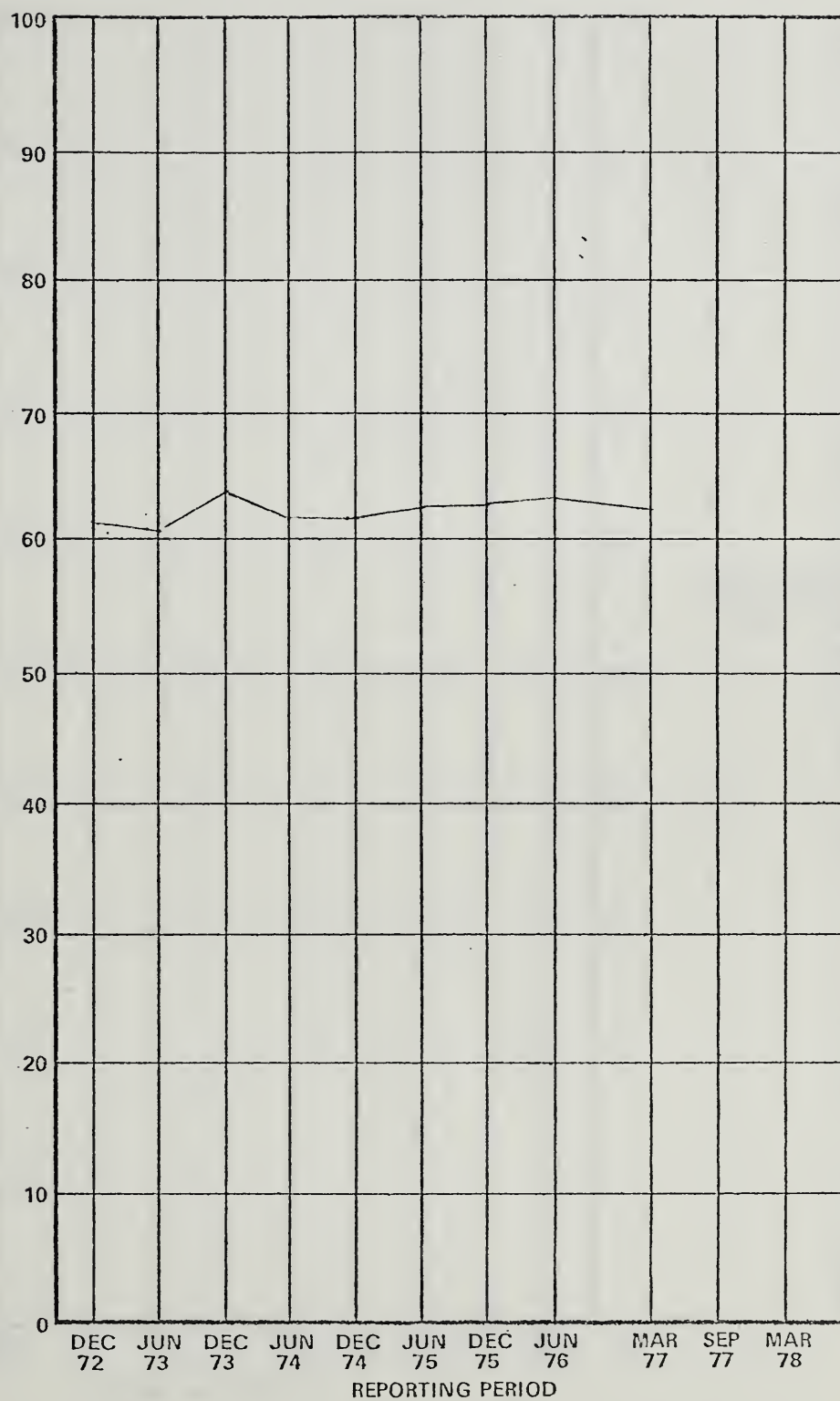


Figure 17

% of Homemakers
Greater Than
55 Years

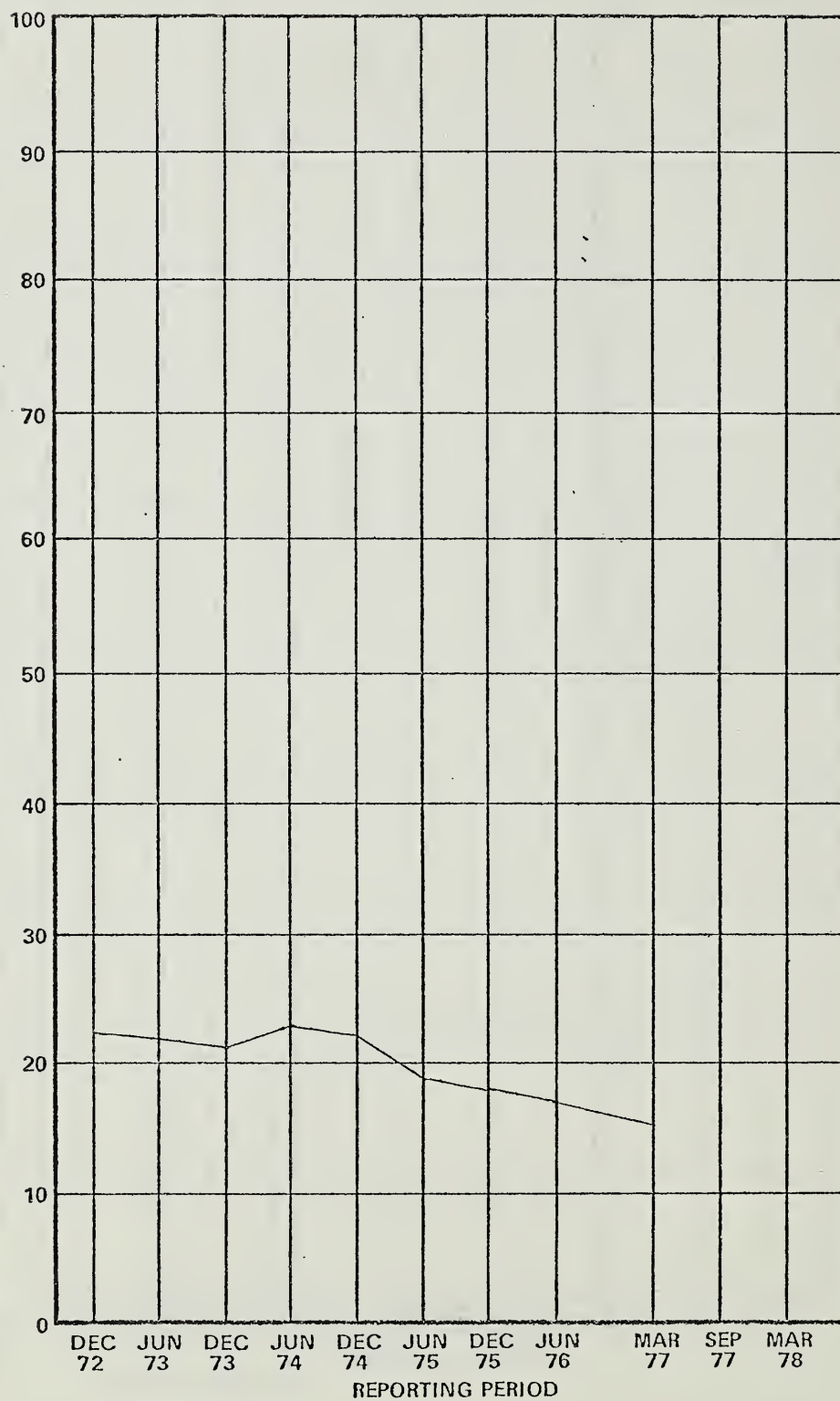


Figure 18

Monthly
Income
from
FR #1
(Dollars)

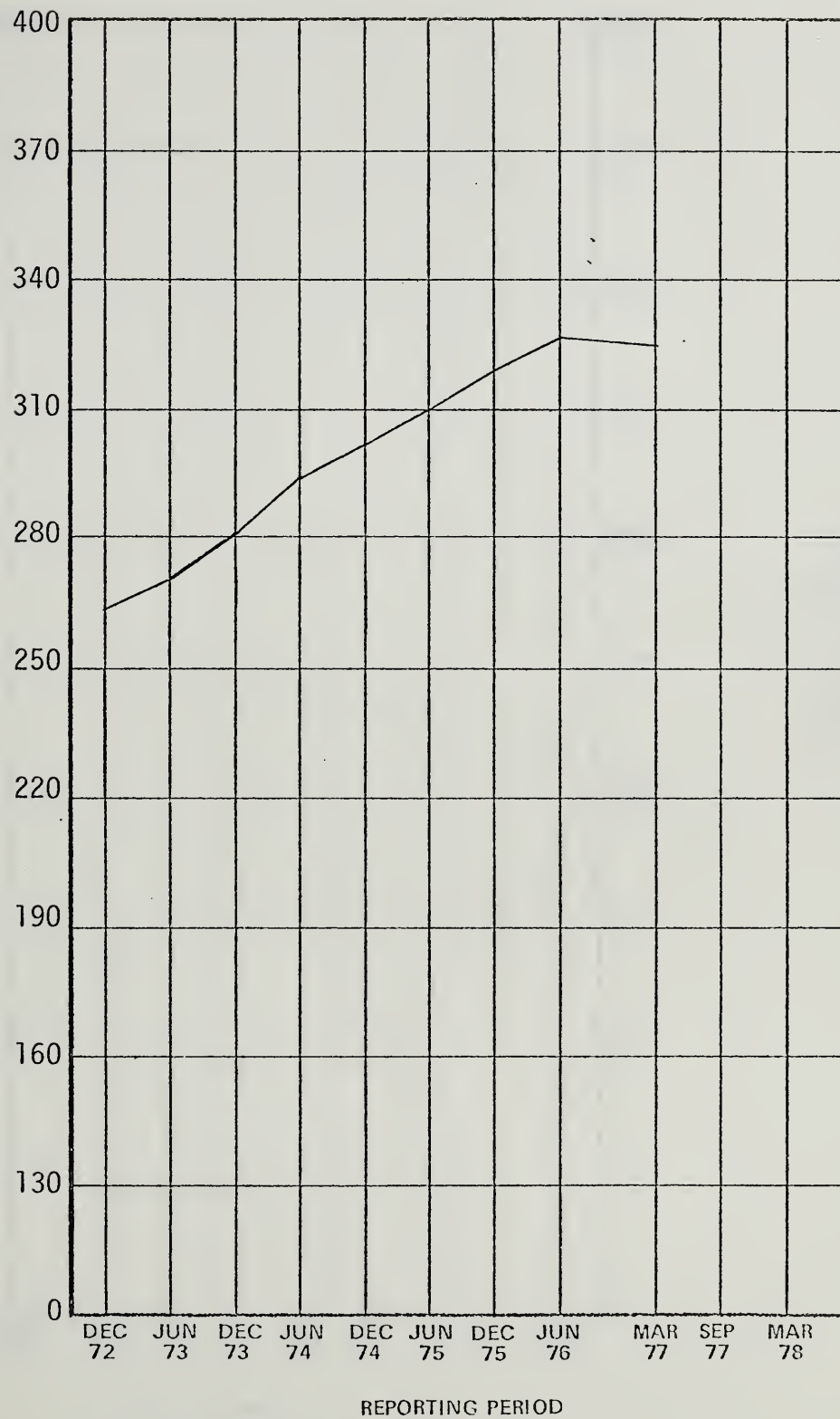


Figure 19

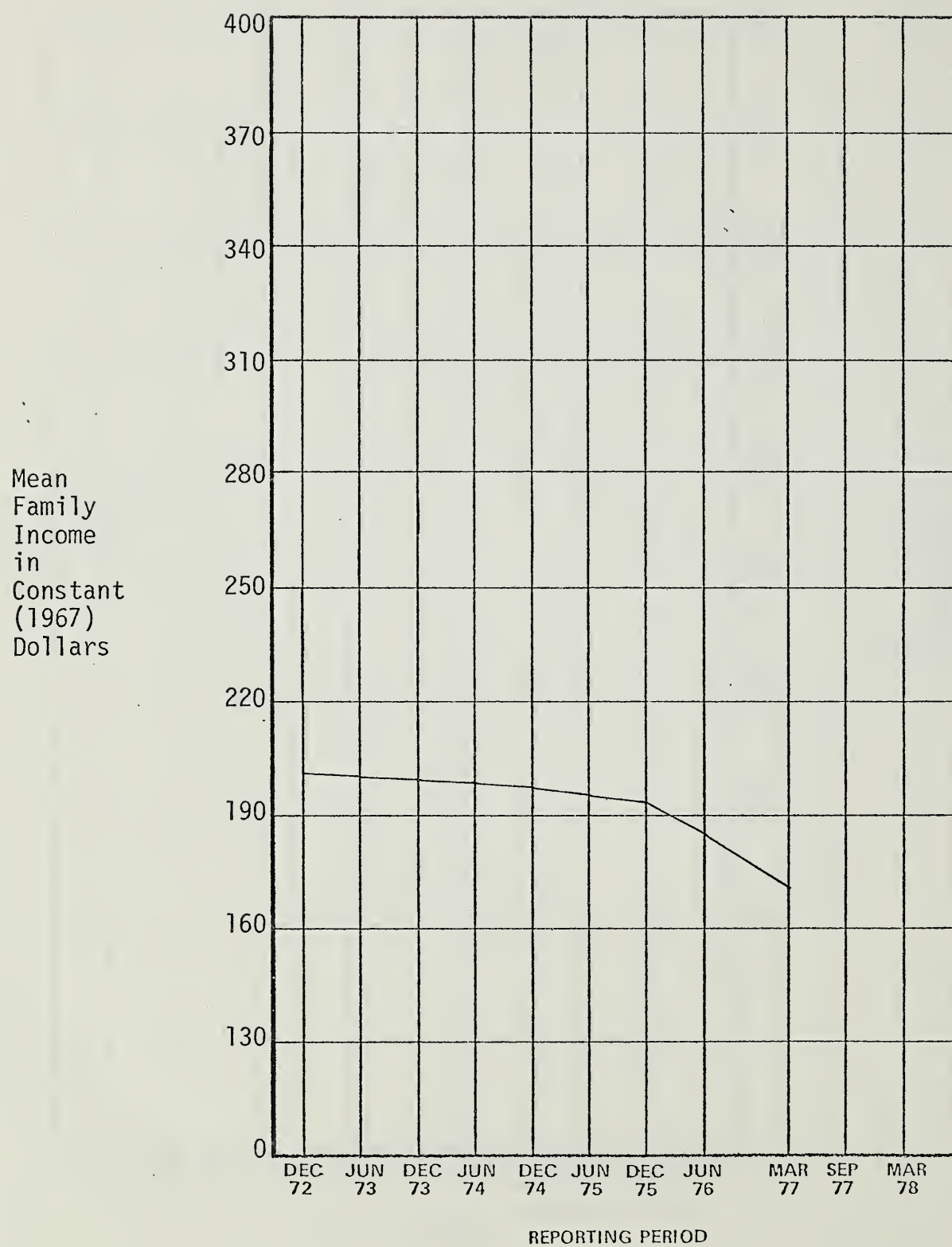


Figure 20

Mean
Program
Family
Income
as % of
Mean U.S.
Family
Income

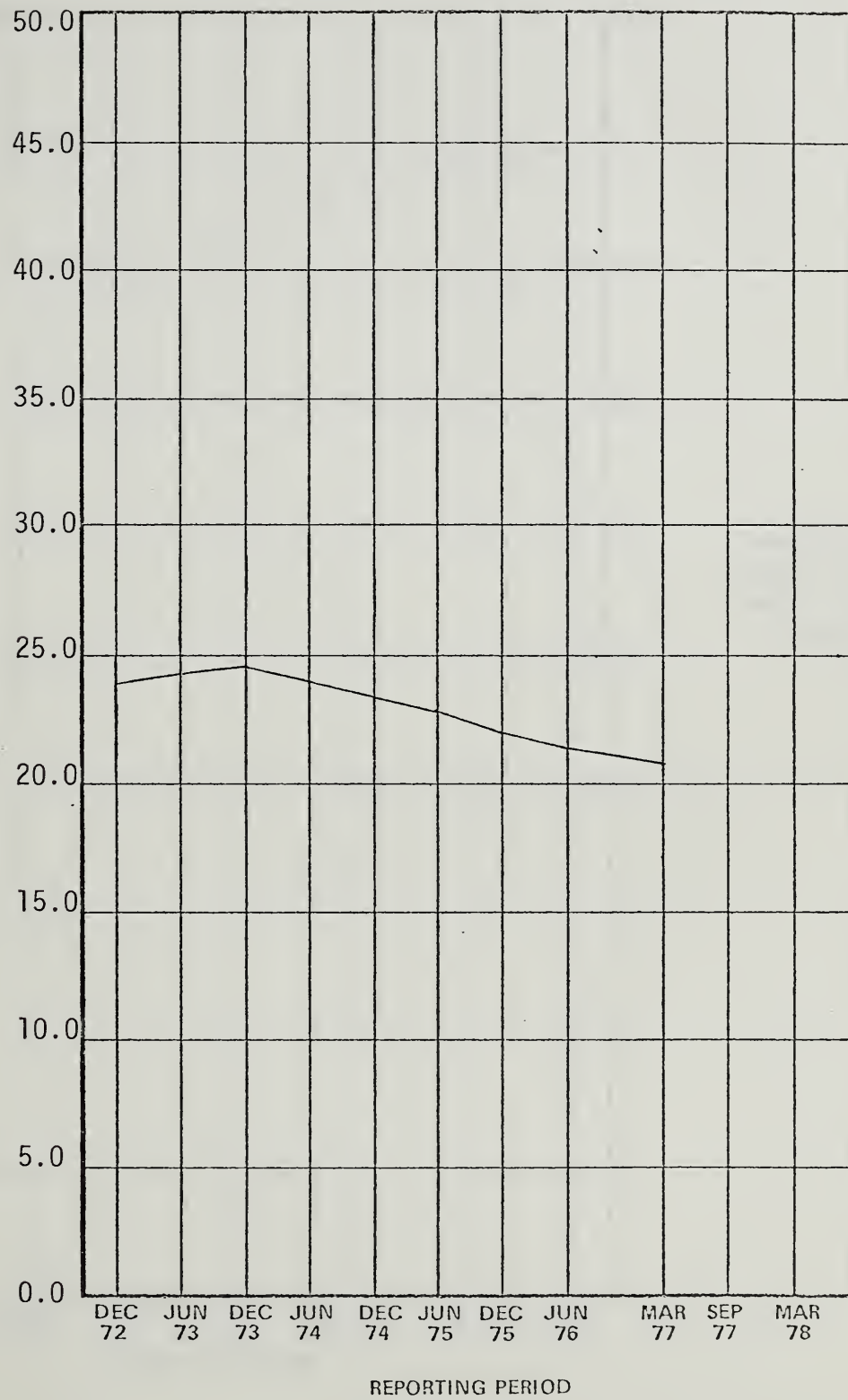


Figure 21

% of Program
Families With
Incomes Under
\$5000/Year

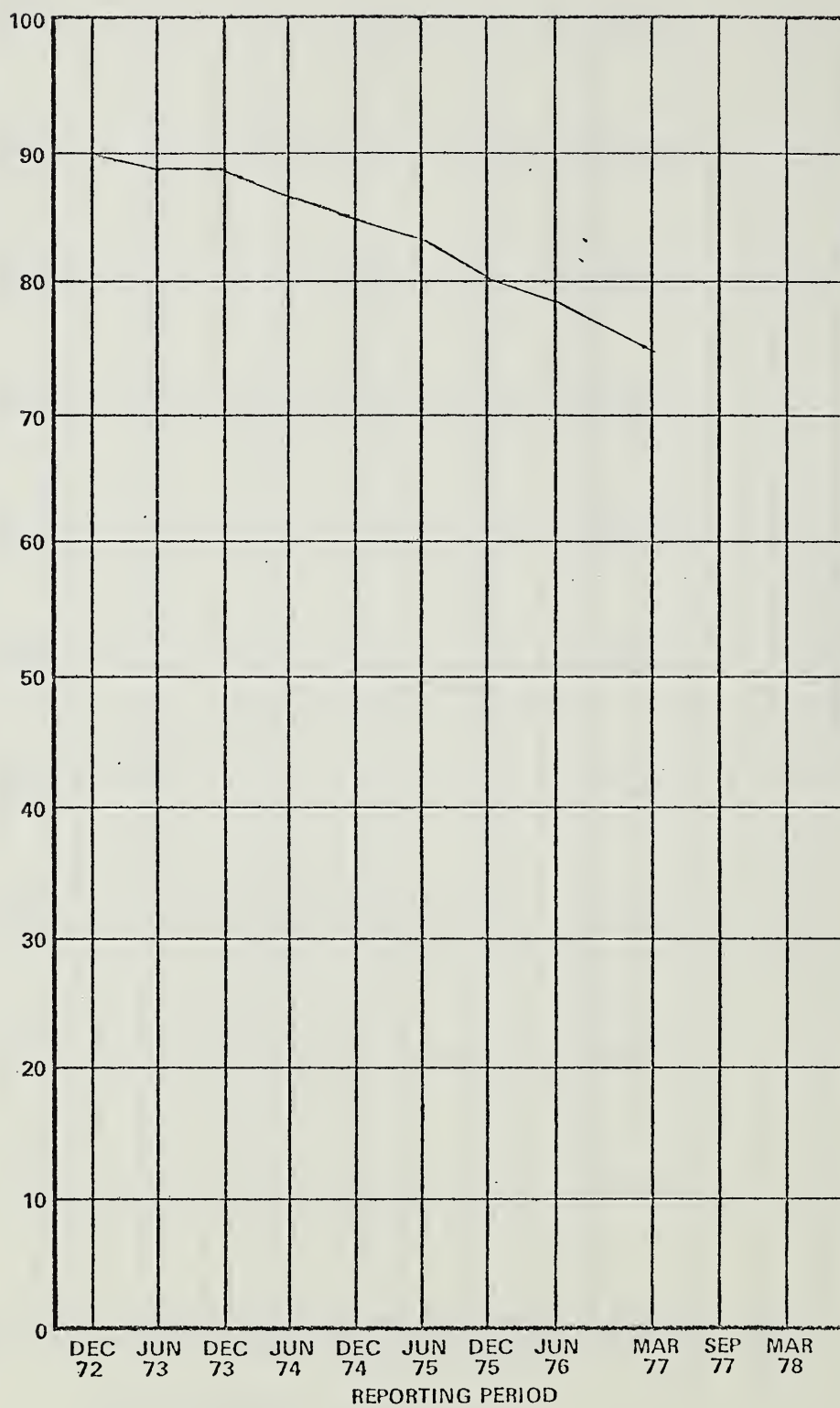


Figure 22

Ratio of
% of
Program
Families
with
Monthly
Incomes
< #418
to U.S.
Mean
Family
Incomes

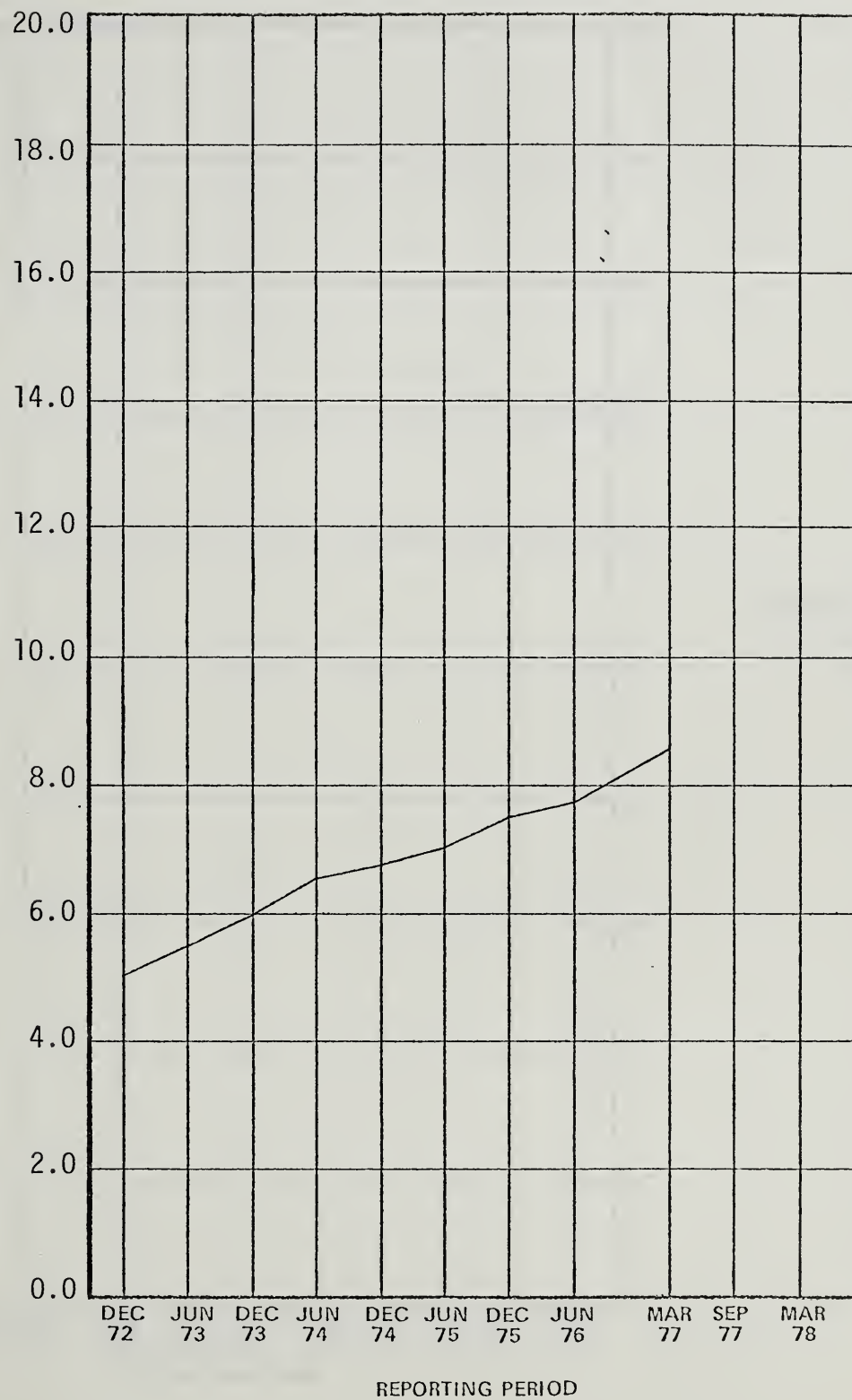


Figure 23

% of Program
Families on
Welfare

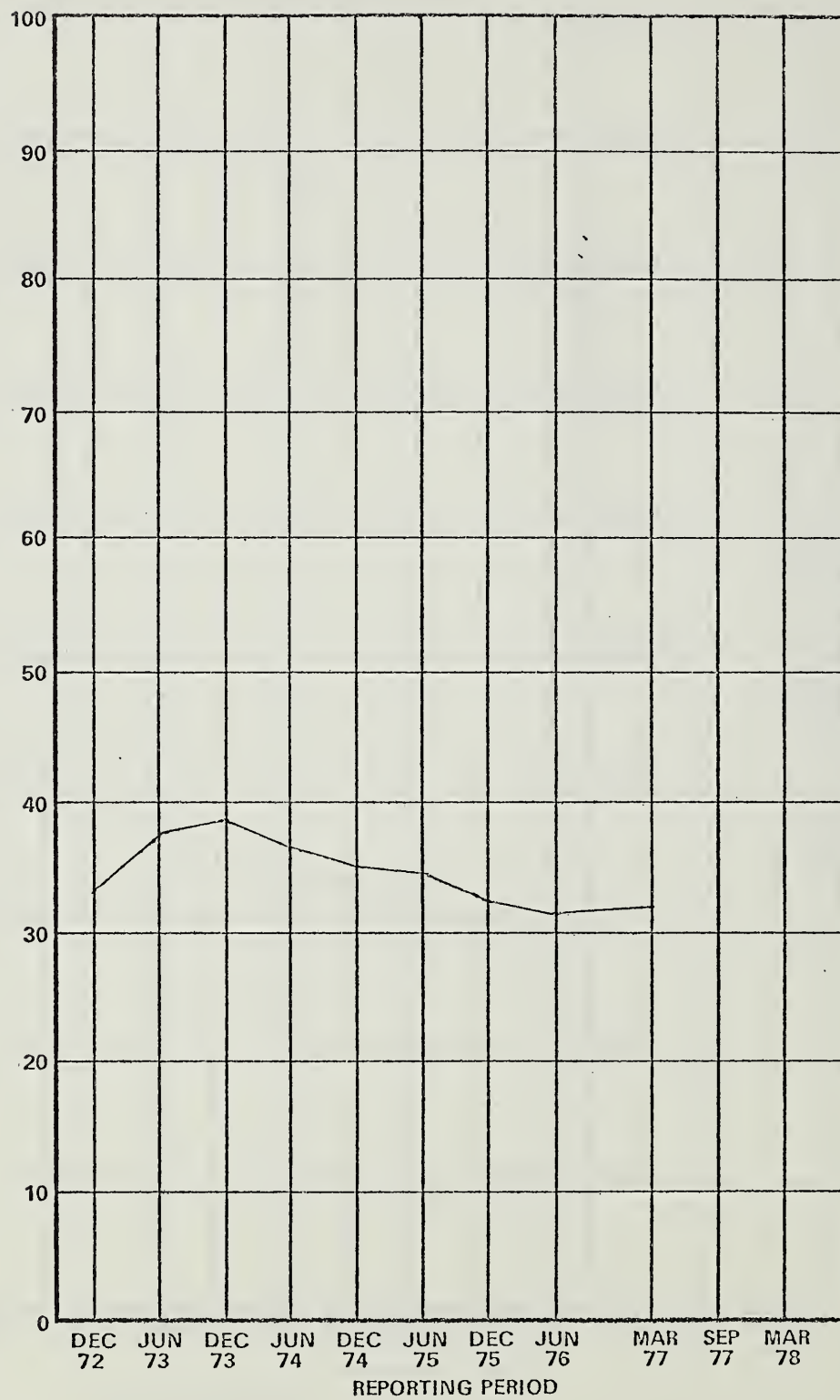


Figure 24

Mean
Program
Family
Size

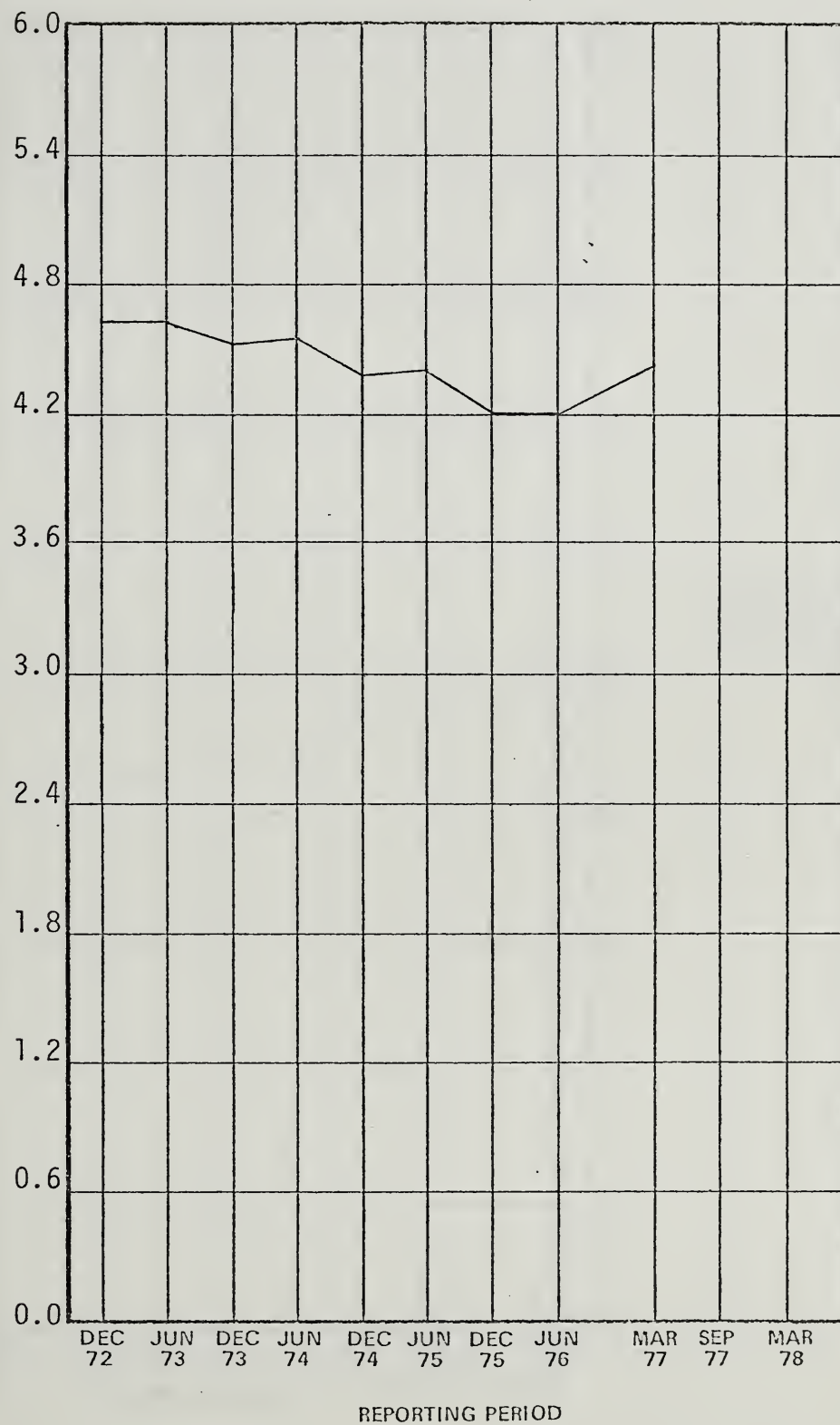


Figure 25

% of Homemakers
With Education
≤ 8th Grade

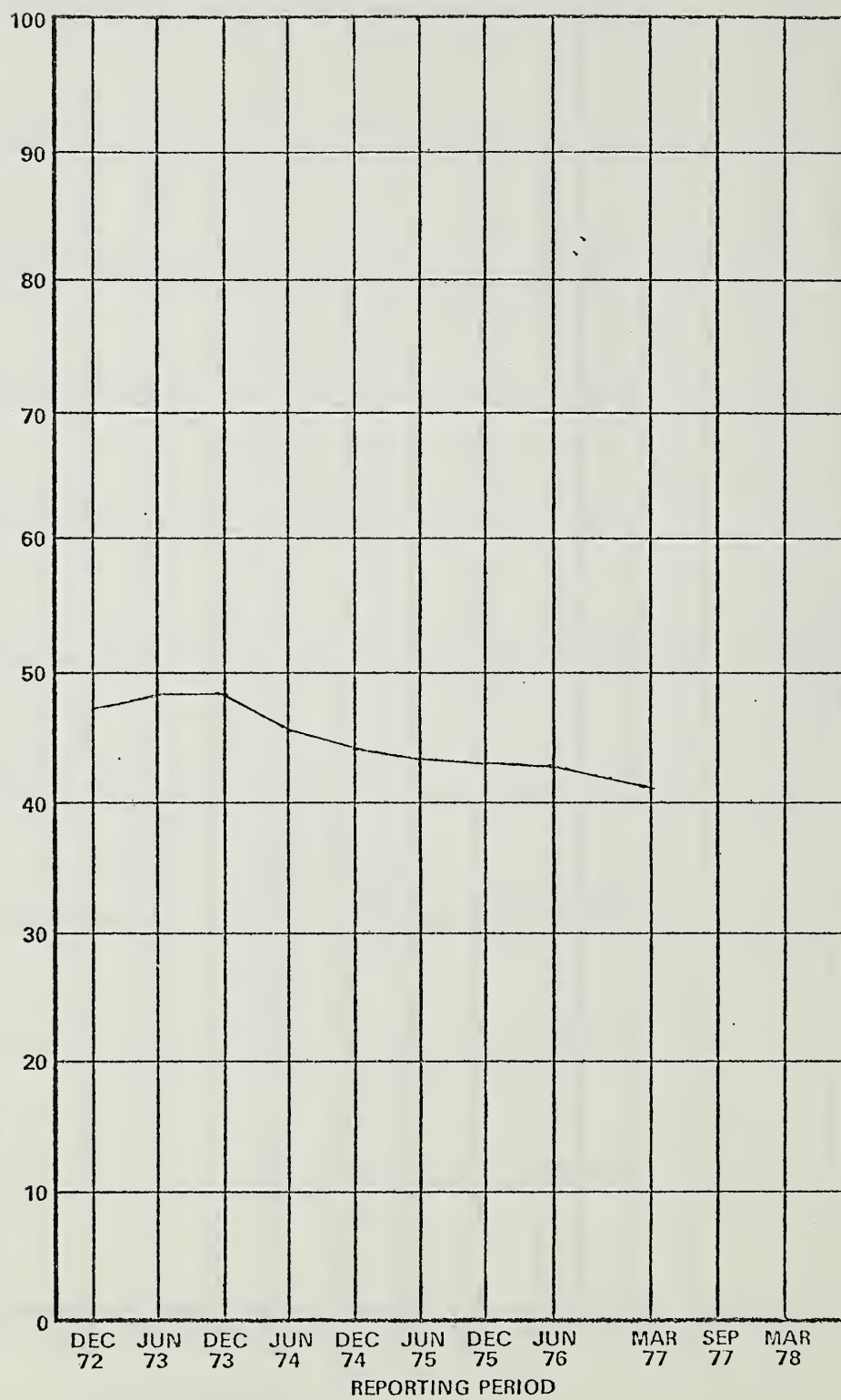


Figure 26

% of Families
Purchasing
Food Stamps

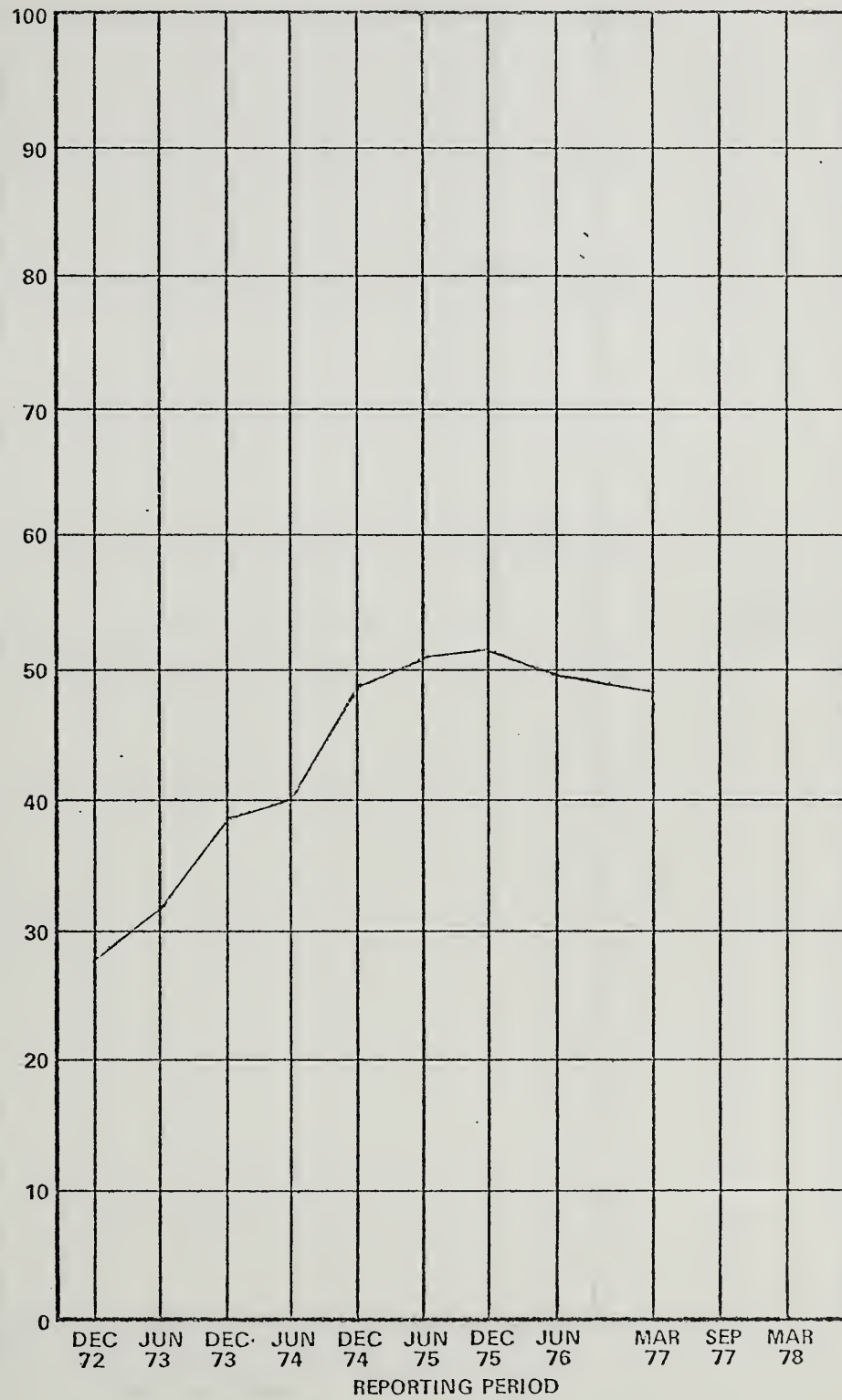


Figure 27

% of Persons
Scoring "1111+"
on FR #1

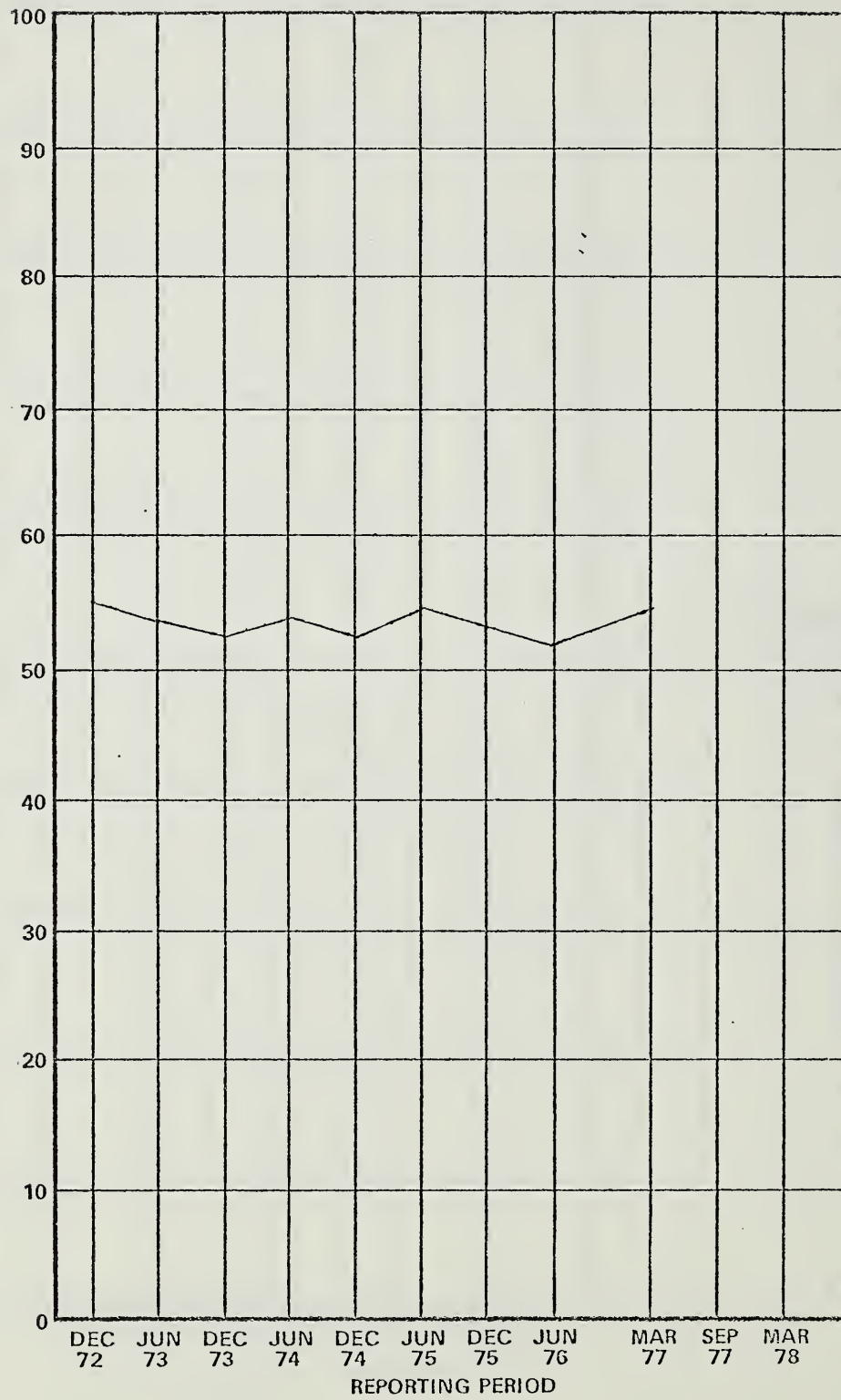


Figure 28

% of Persons
Scoring "2244+"
on FR #1

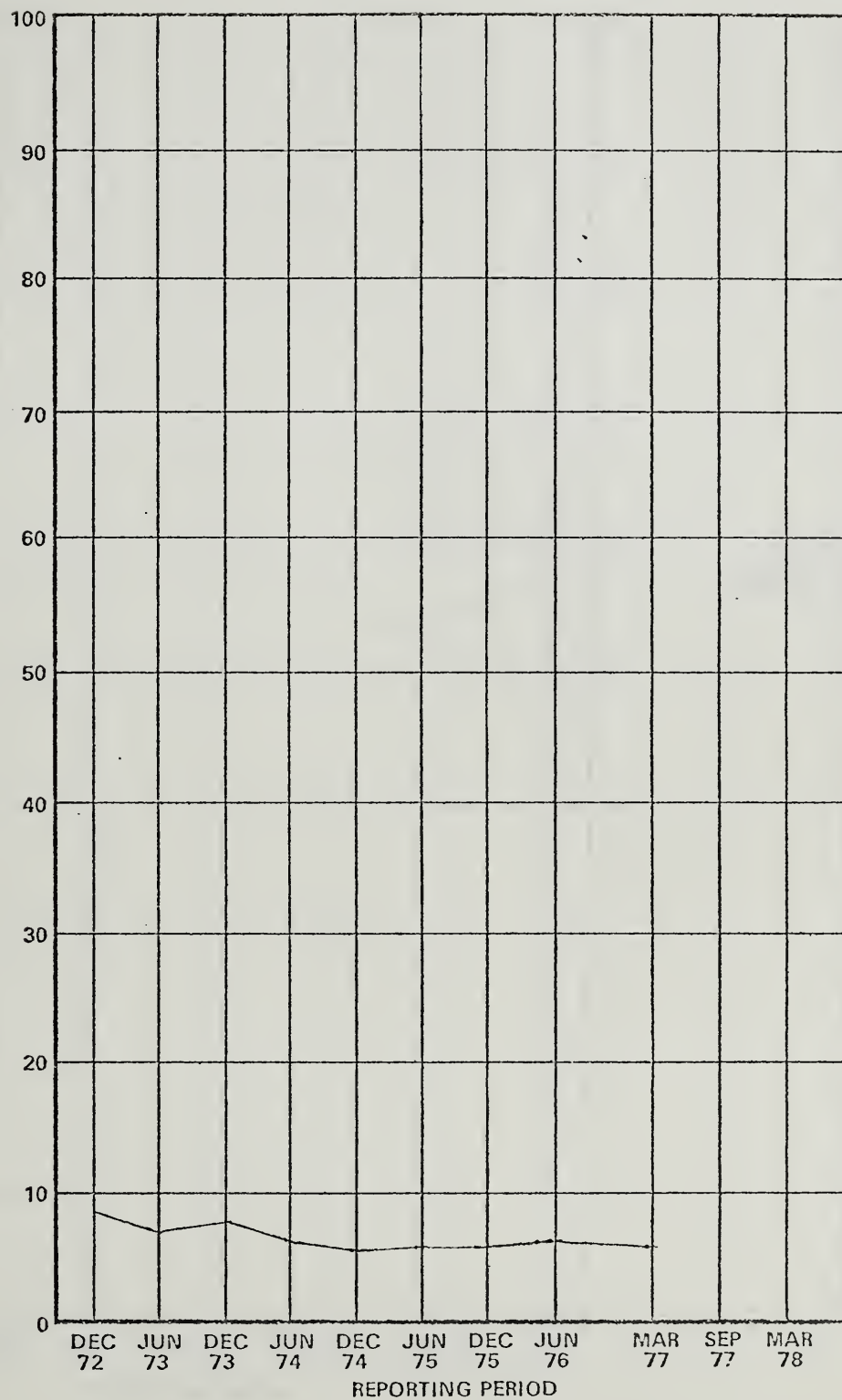


Figure 29

% of Family
Members Under
19 Years

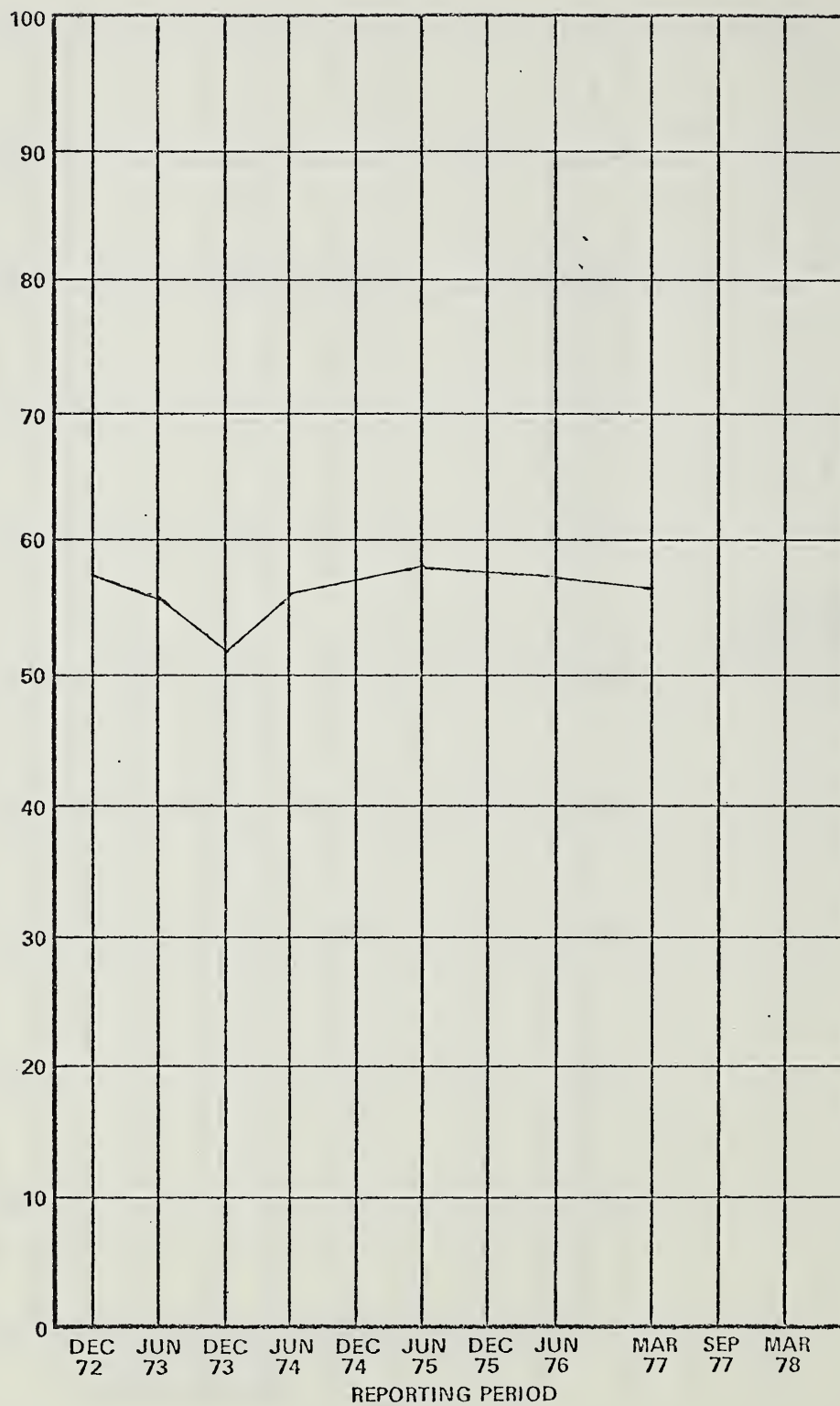


Figure 30

% of Children
Under 19 in
School

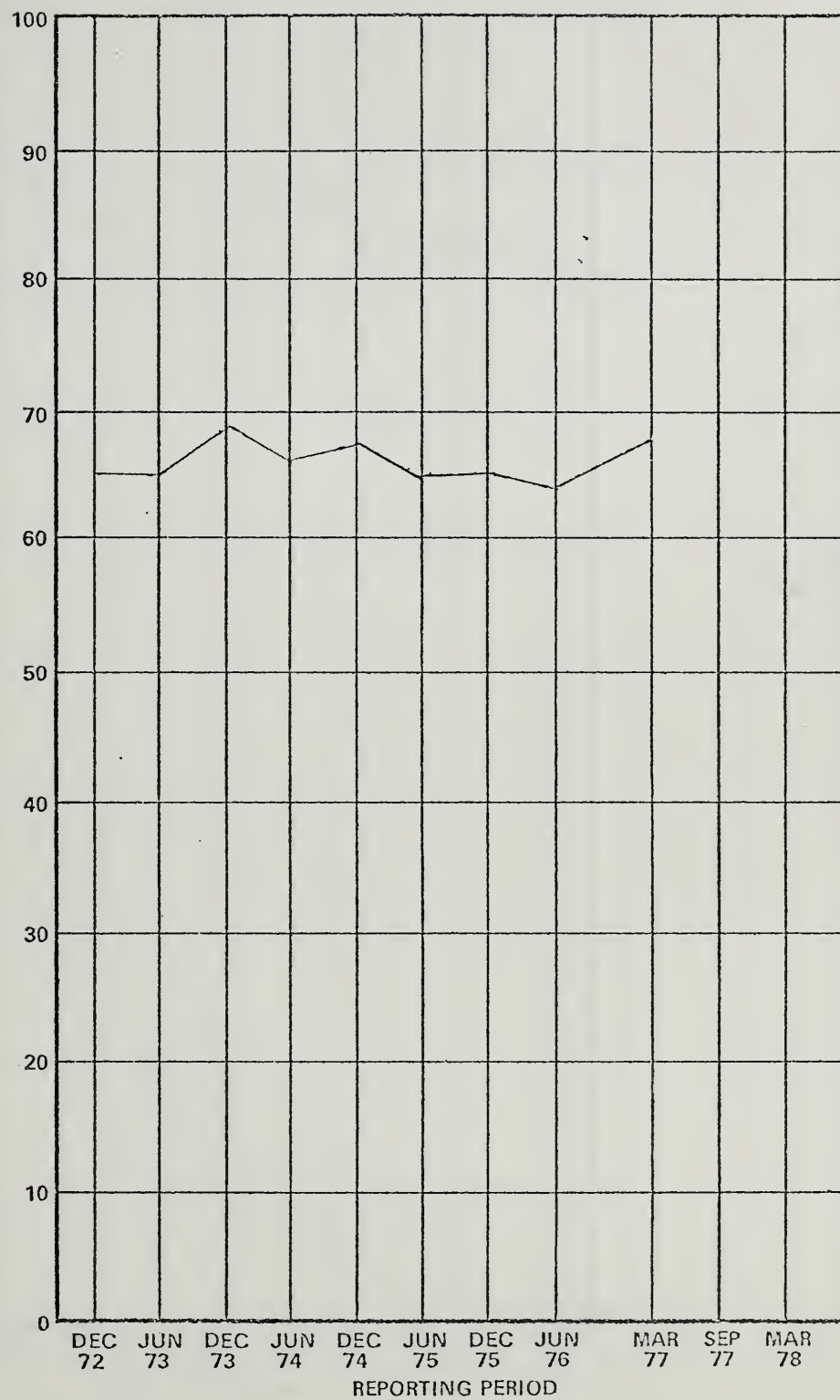


Figure 31

Children in
School Lunch
Program

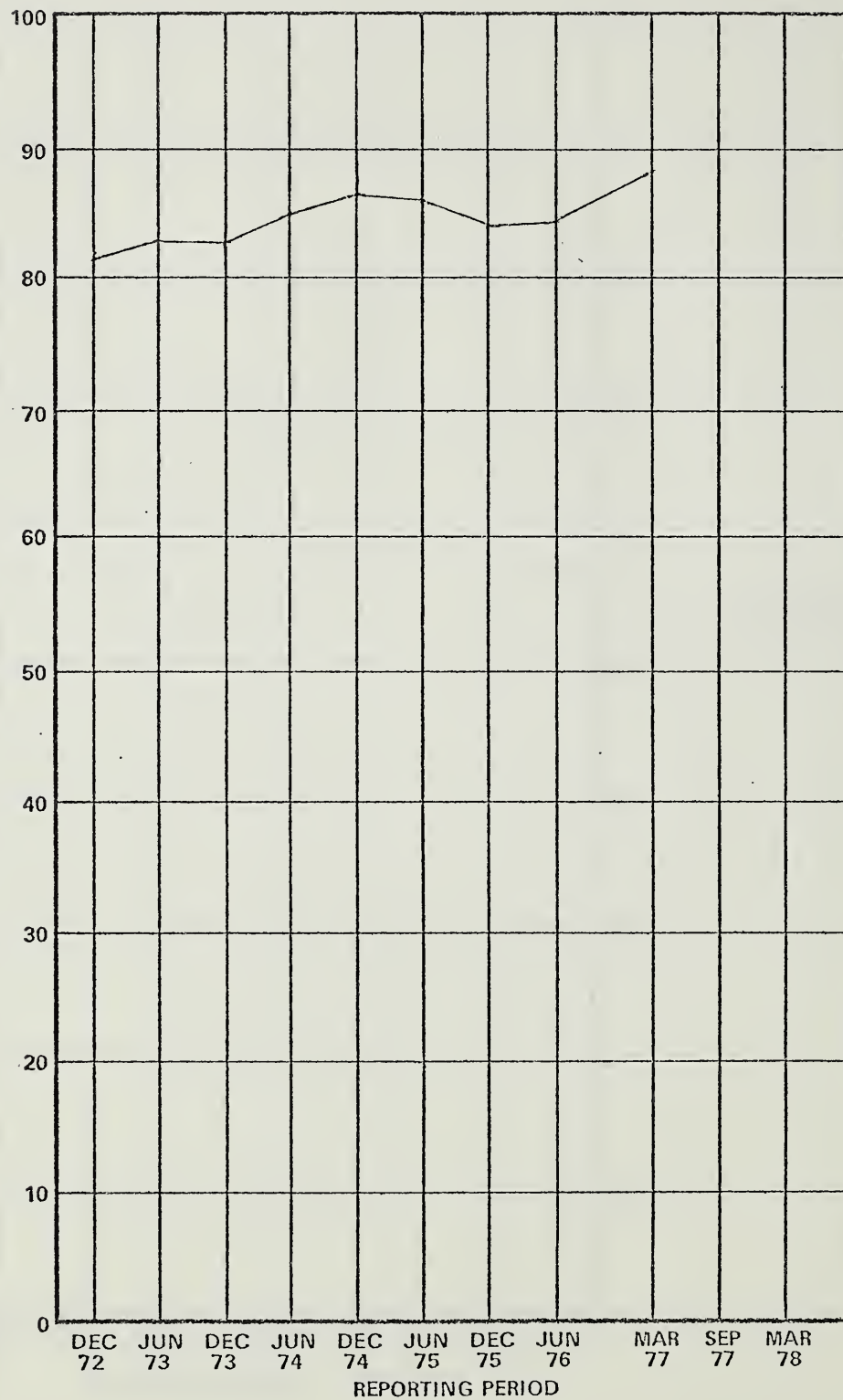


Figure 32

% of Families
Receiving
Donated Food

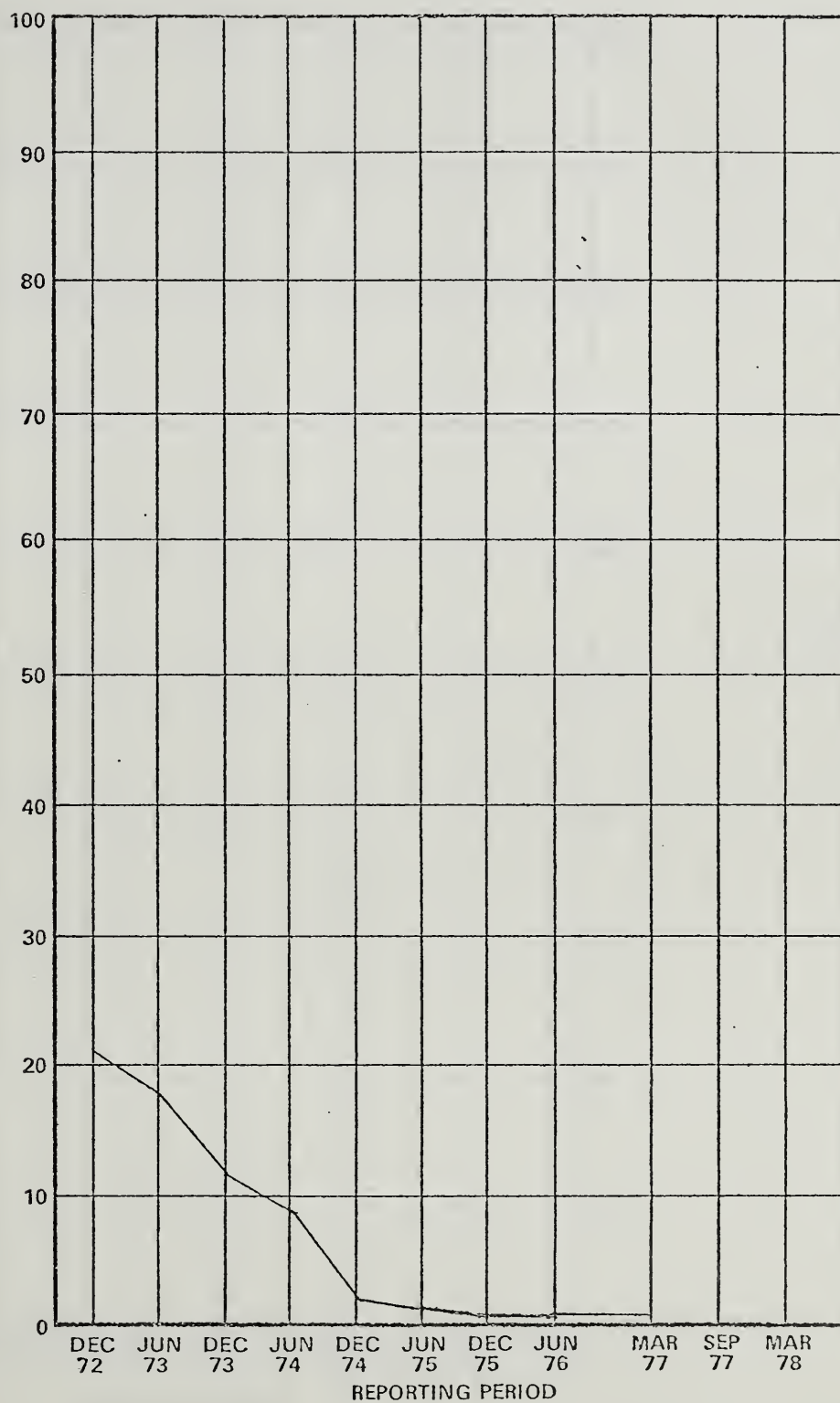


Figure 33

% White
Homemakers

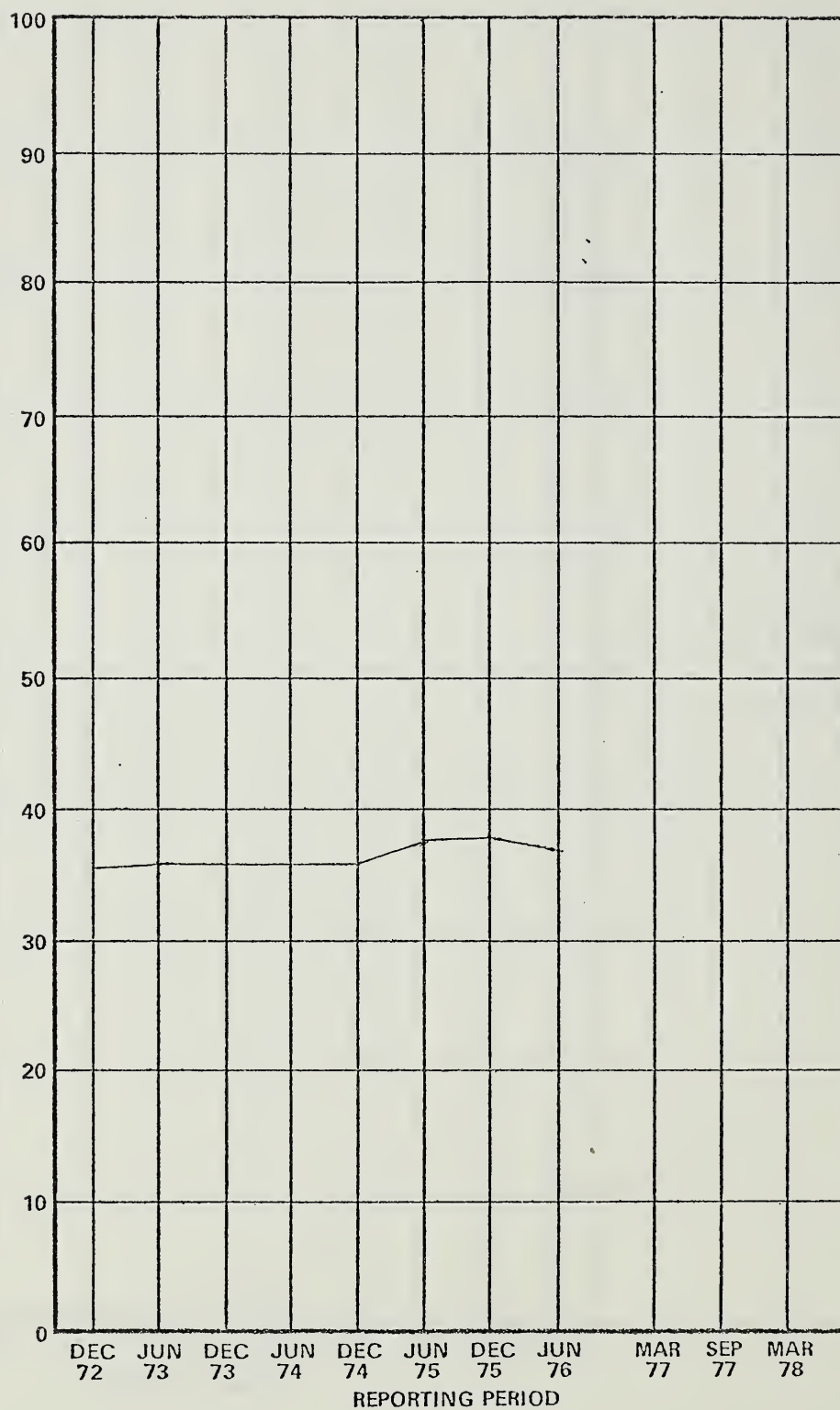


Figure 34

% Black
Homemakers

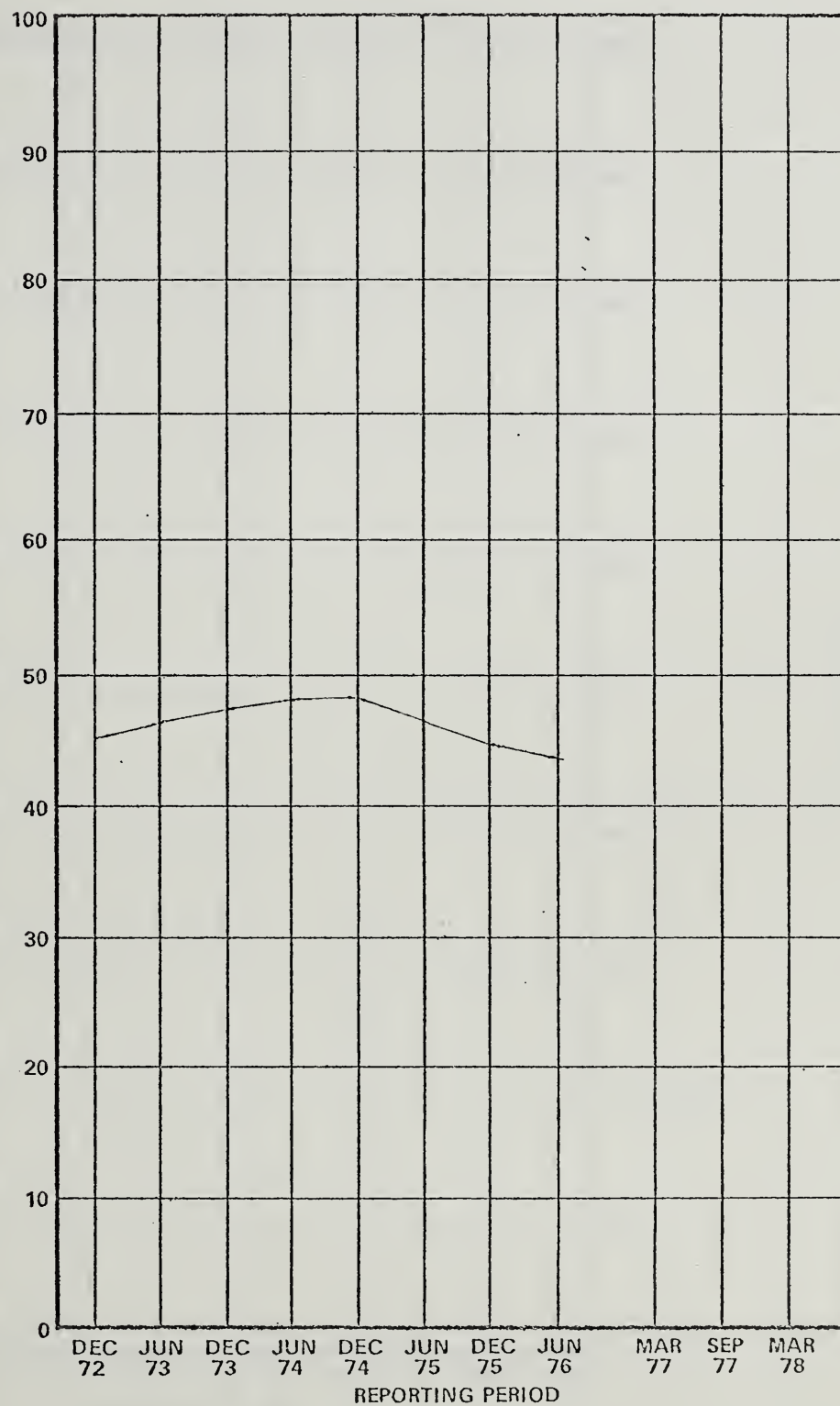


Figure 35

% Spanish
Surname
Homemakers

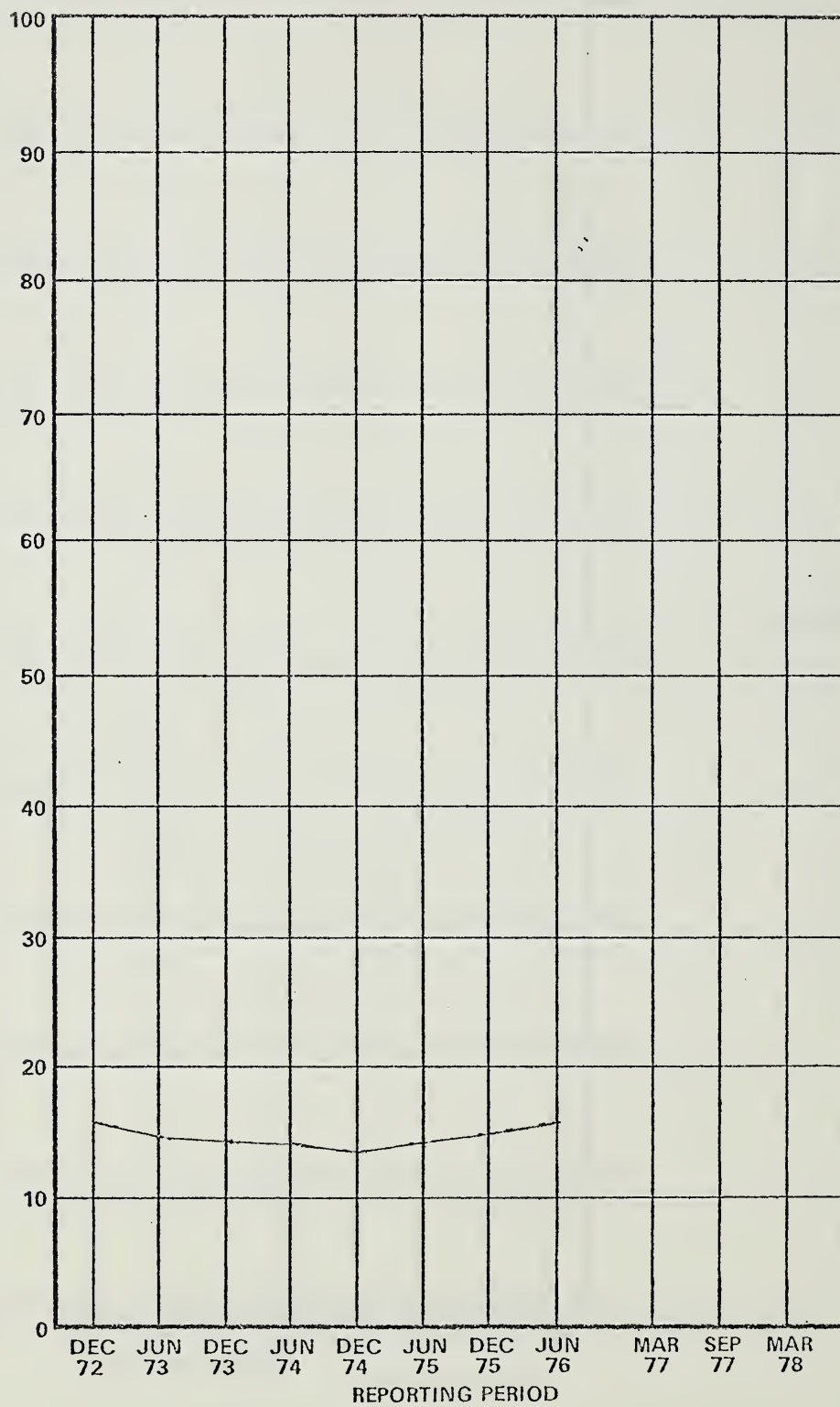


Figure 36

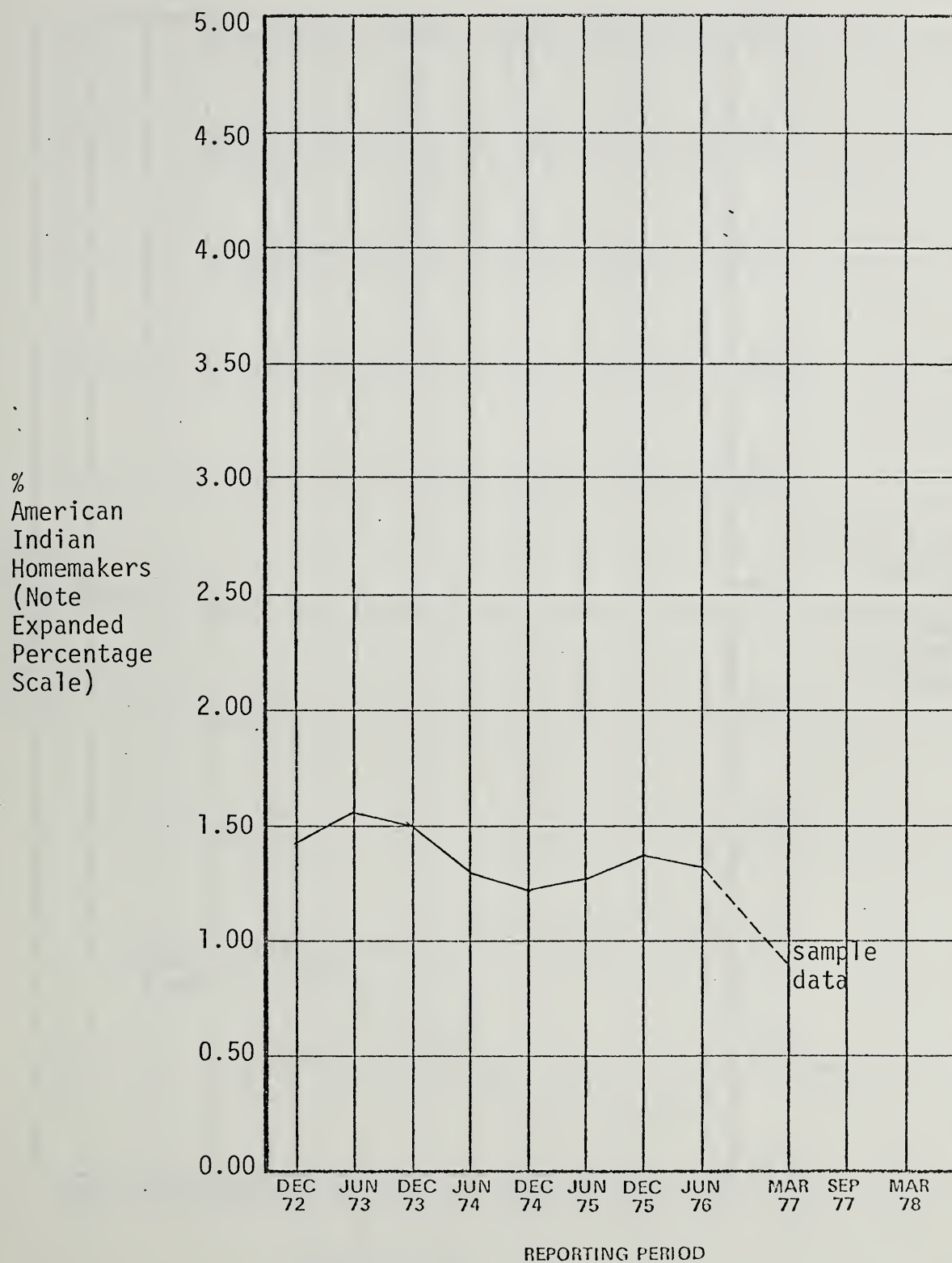


Figure 37

%
Oriental
Homemakers
(Note
Expanded
Percentage
Scale)

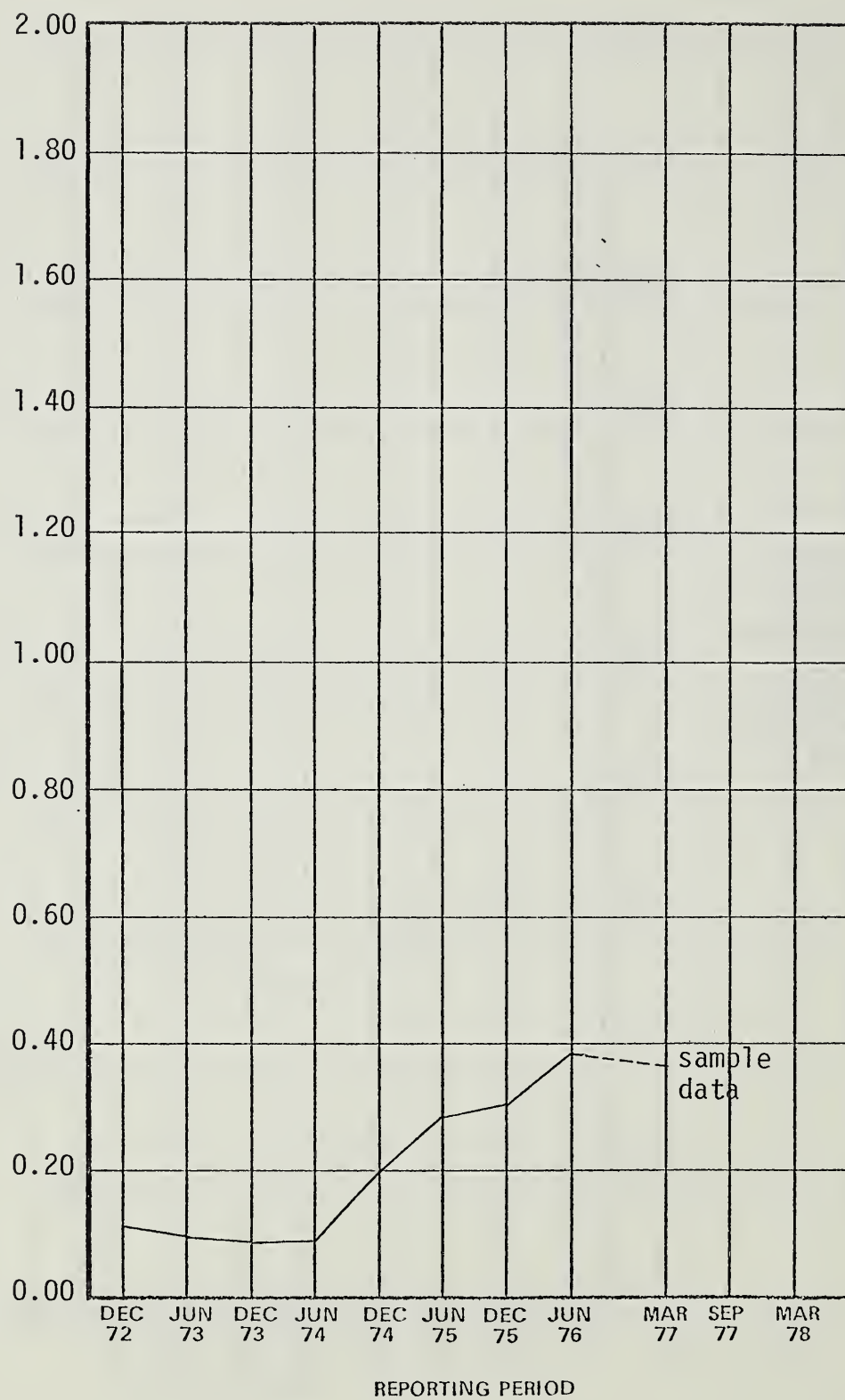


Figure 38

%
"Other"
Homemakers
(Note
Expanded
Percentage
Scale)

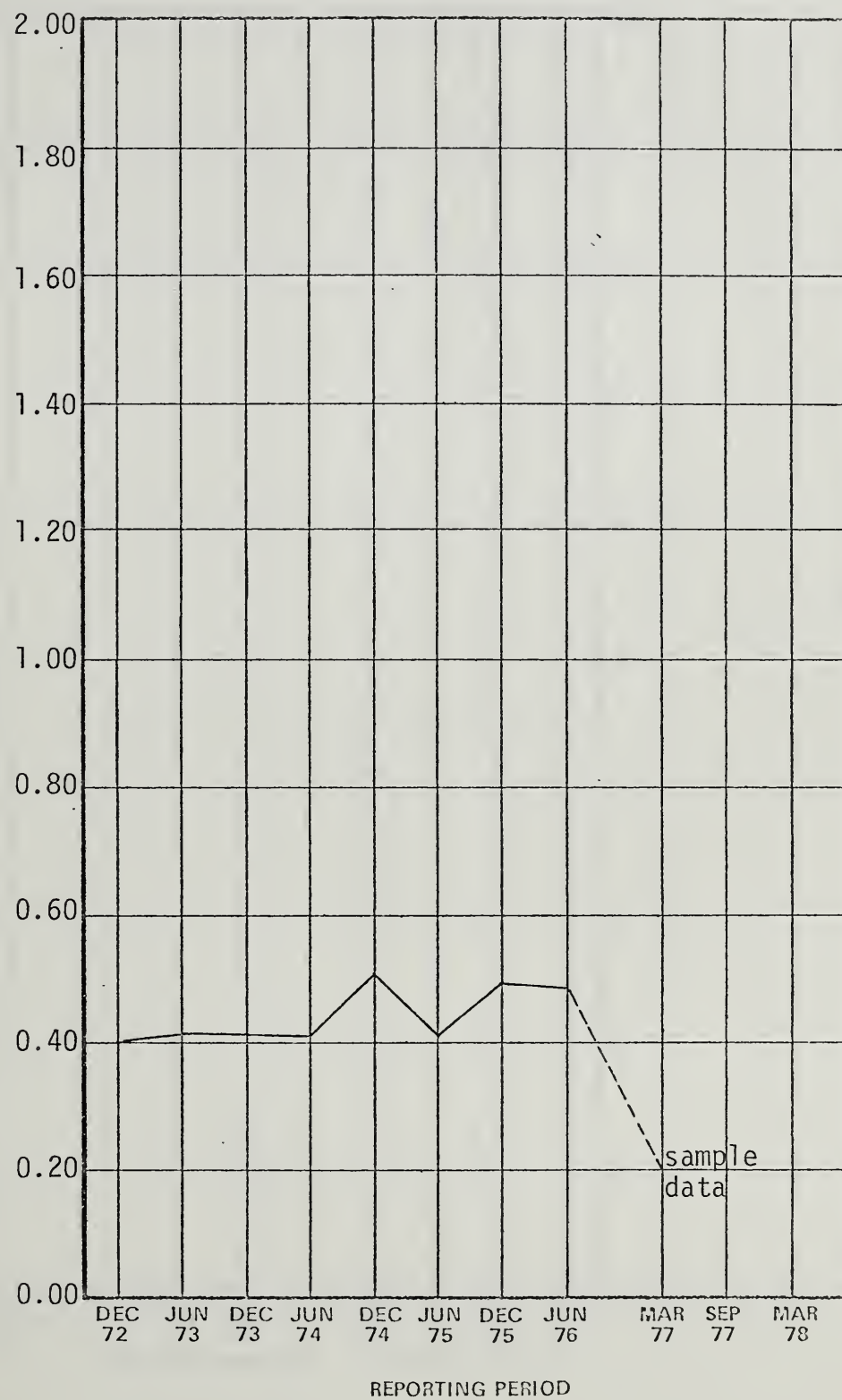


Figure 39

% White
Aides

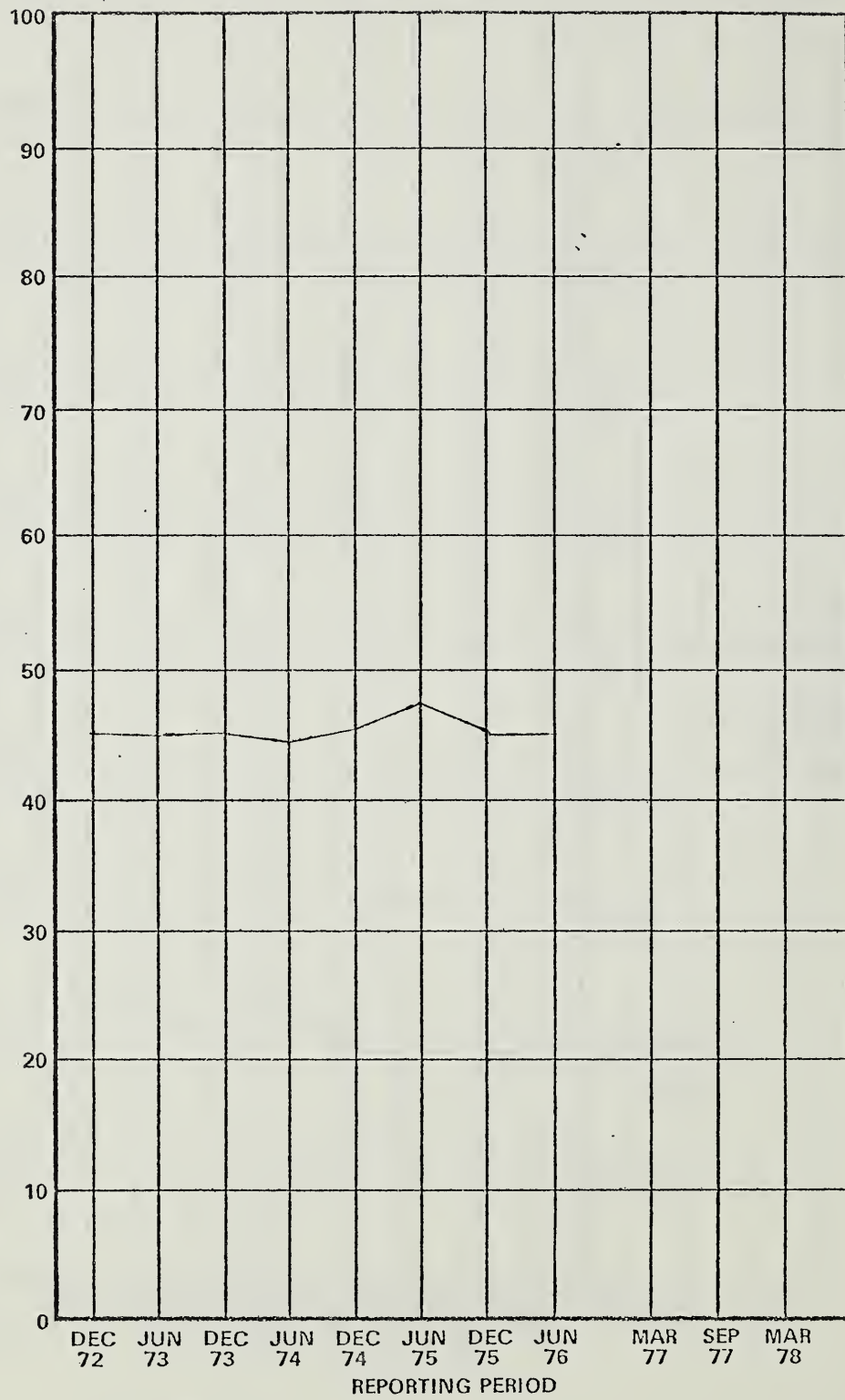


Figure 40

% Black
Aides

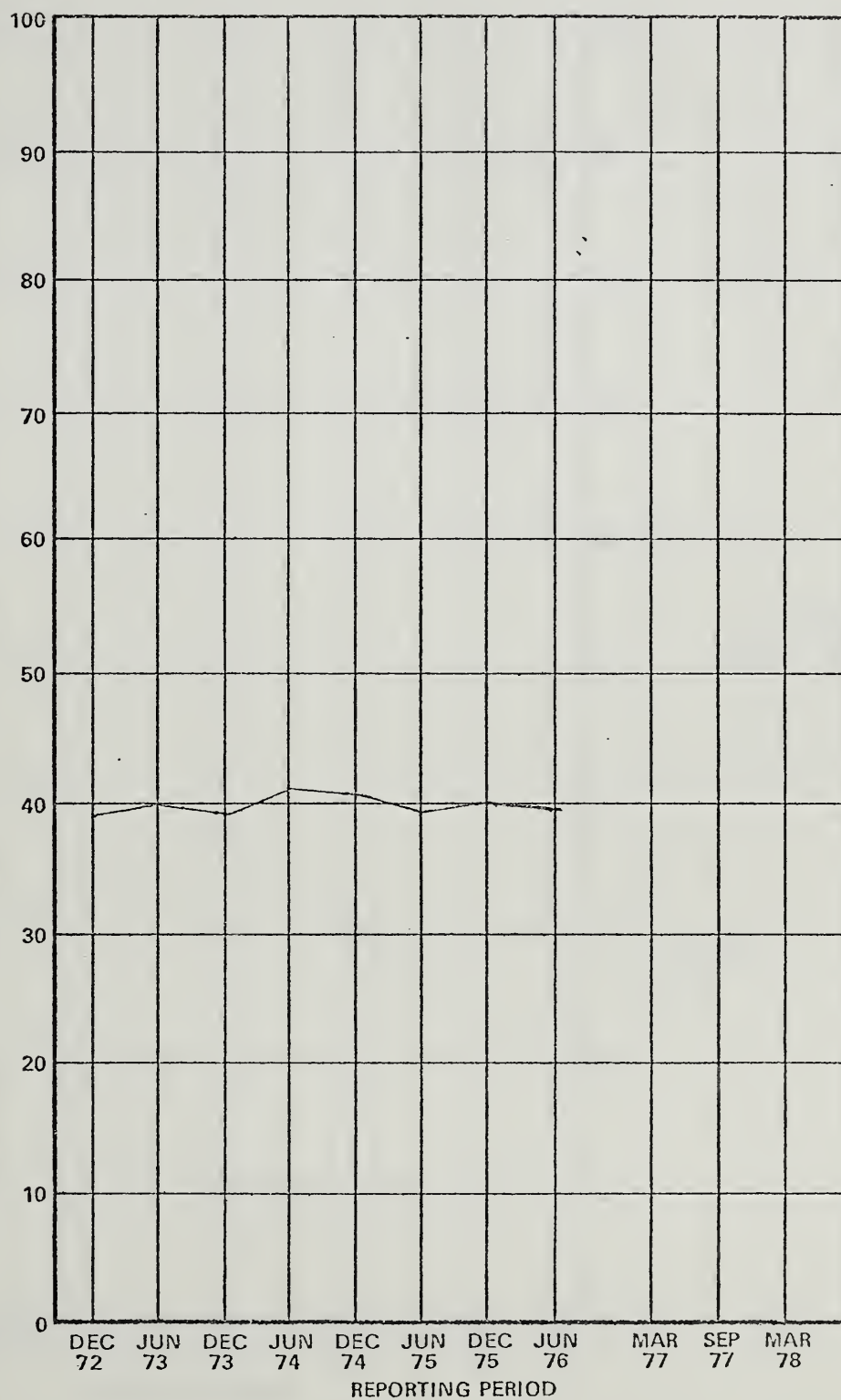


Figure 41

% Spanish
Surname Aides

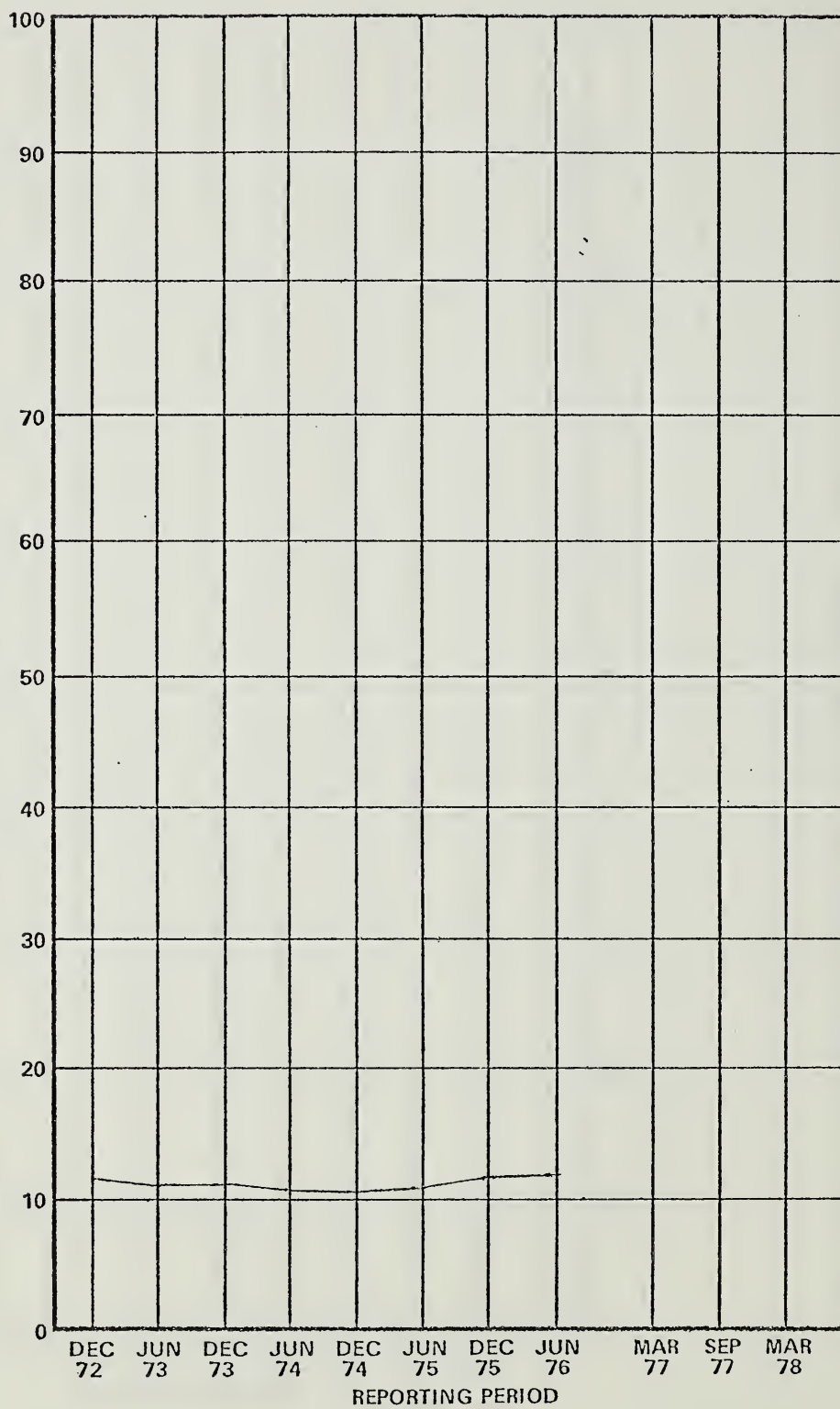


Figure 42

%
American
Indian
Aides
(Note
Expanded
Percentage
Scale)

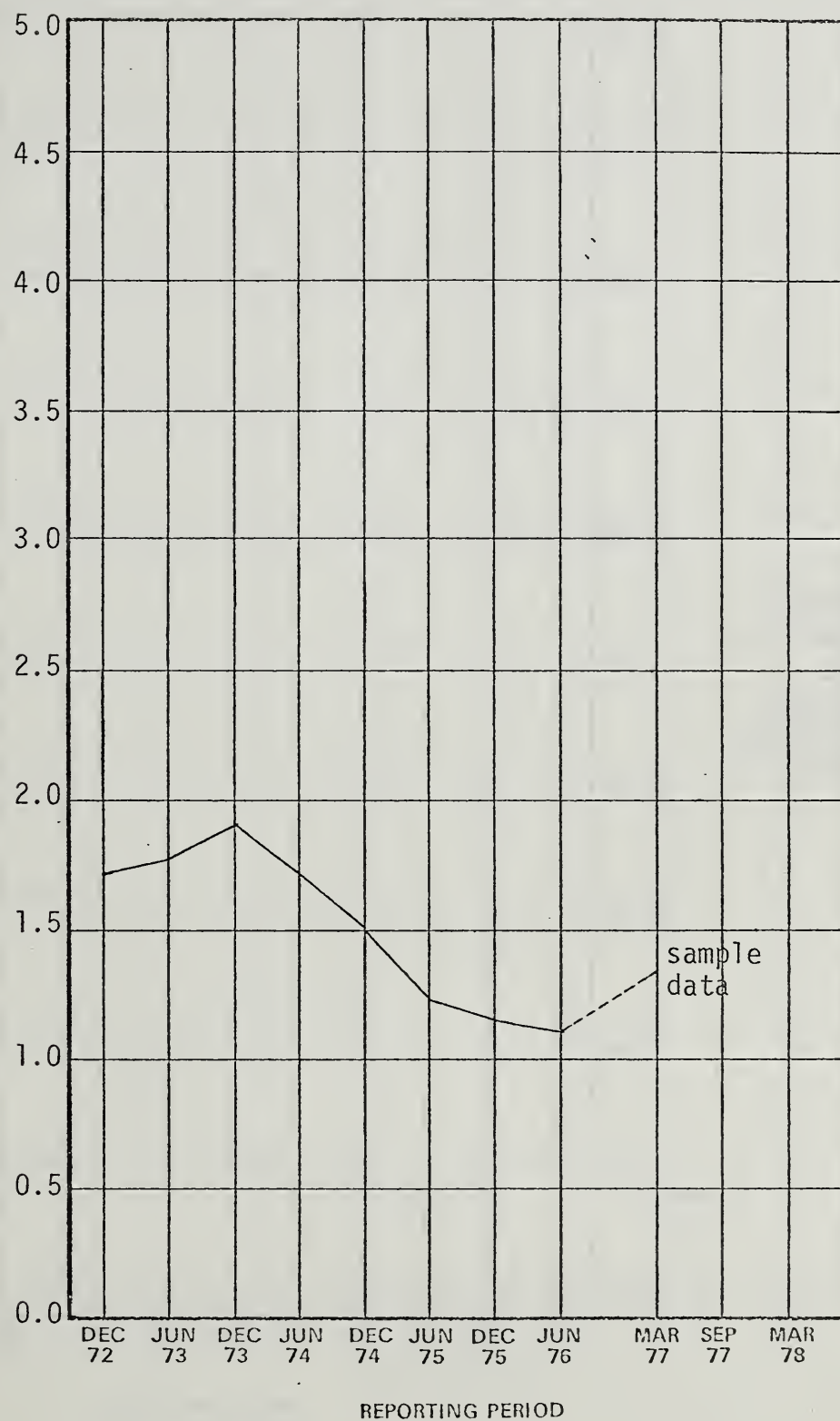


Figure 43

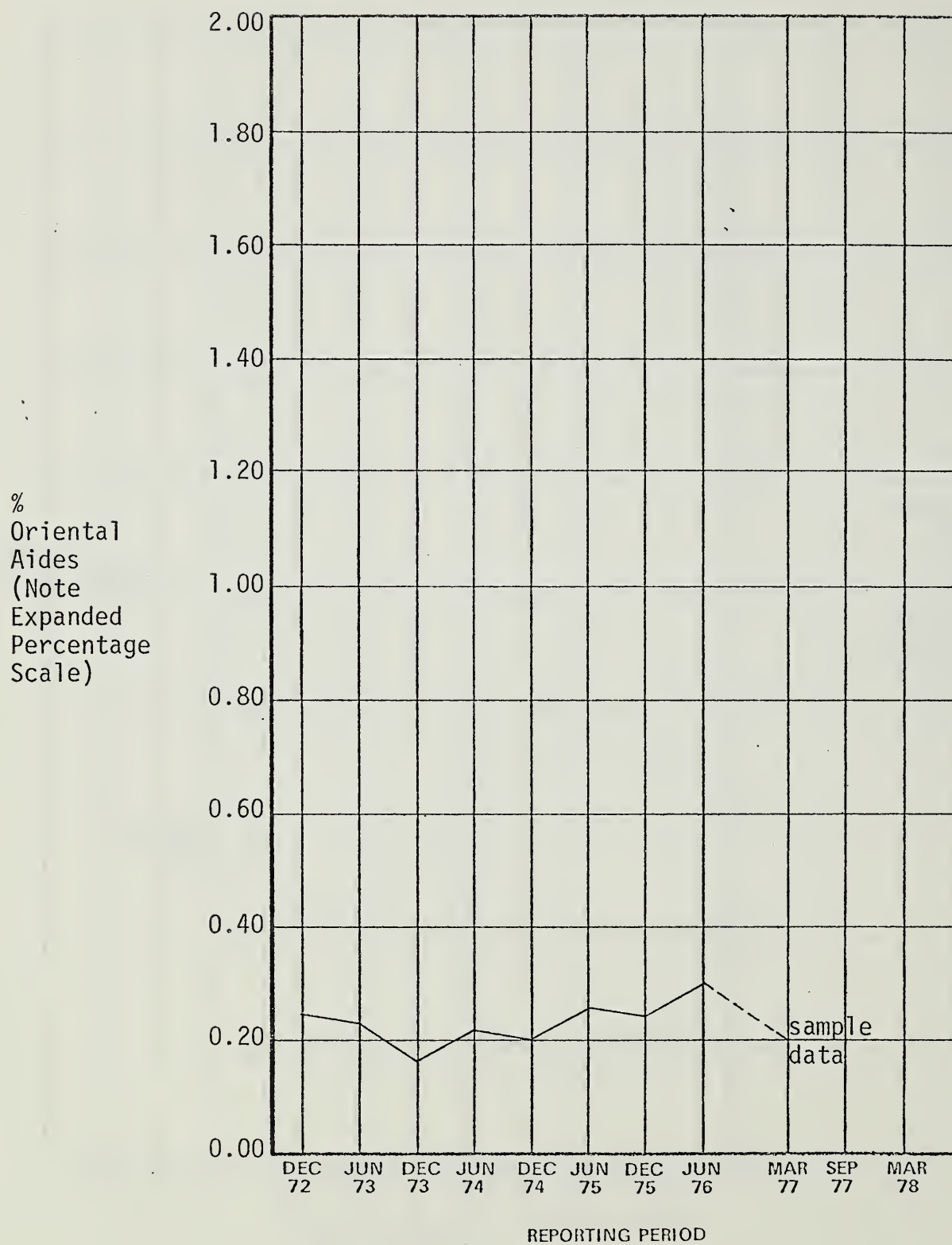


Figure 44

%
"Other"
Aides
(Note
Expanded
Percentage
Scale)

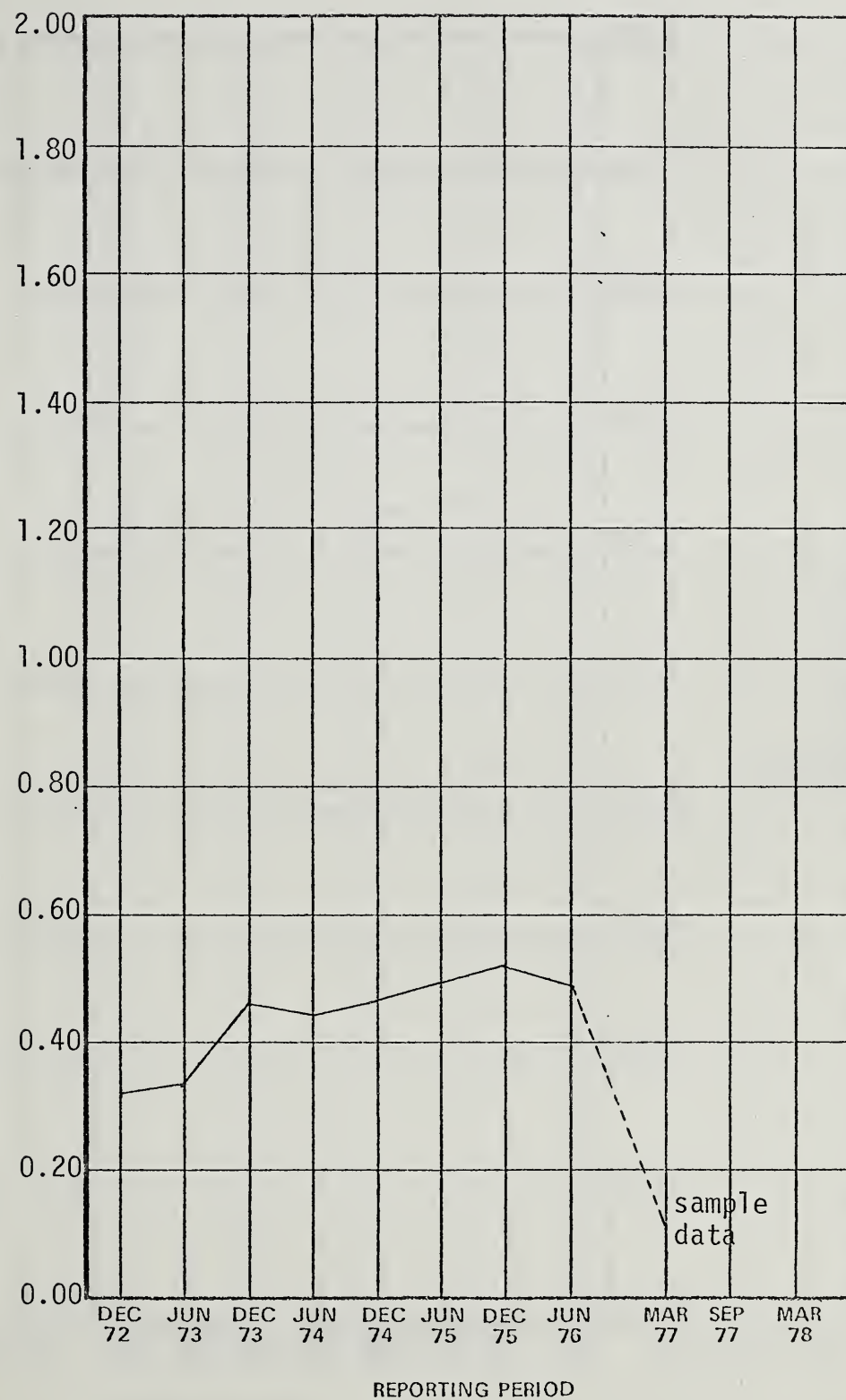


Figure 45

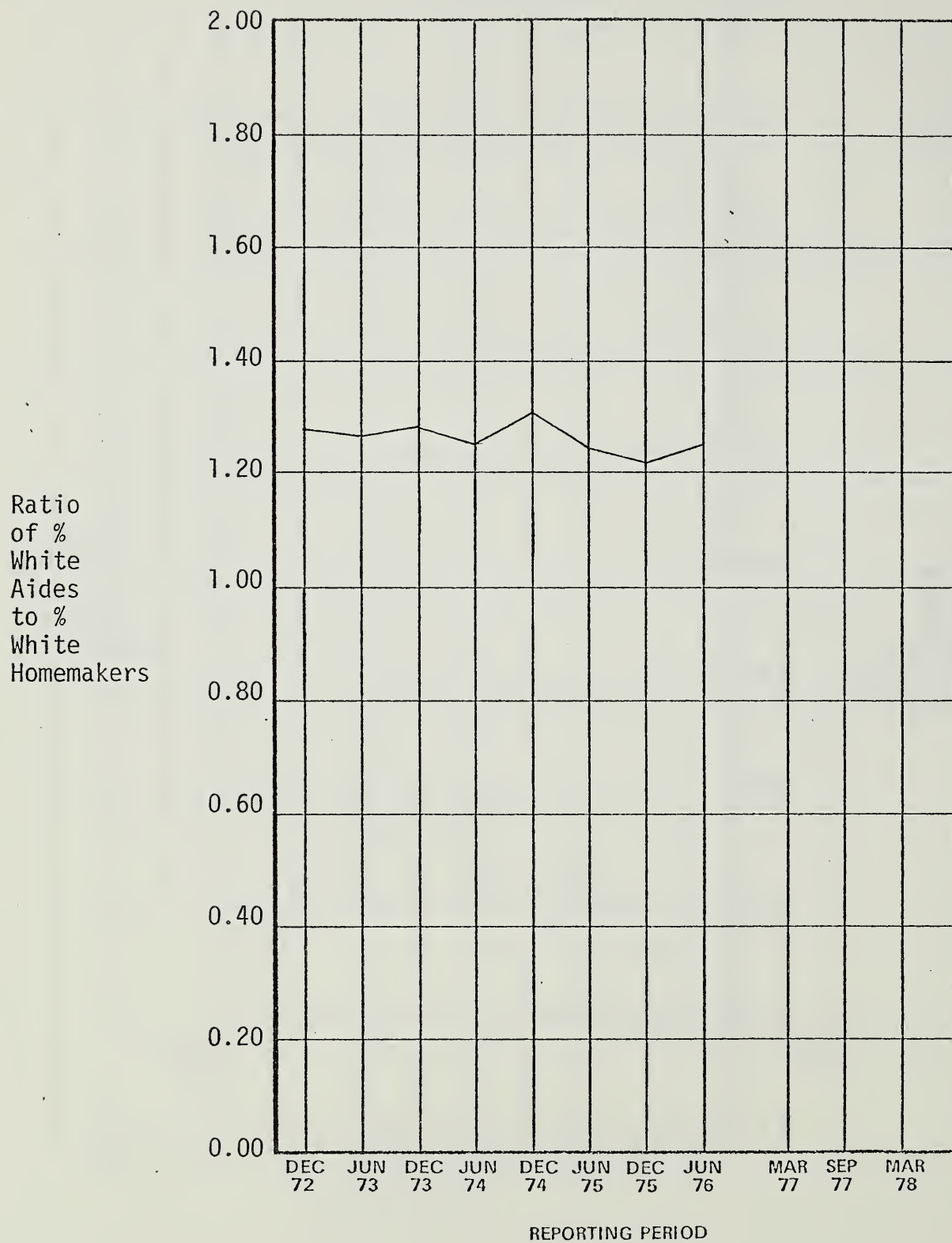


Figure 46

Ratio
of
Black
Aides
to
Black
Homemakers
(%s)

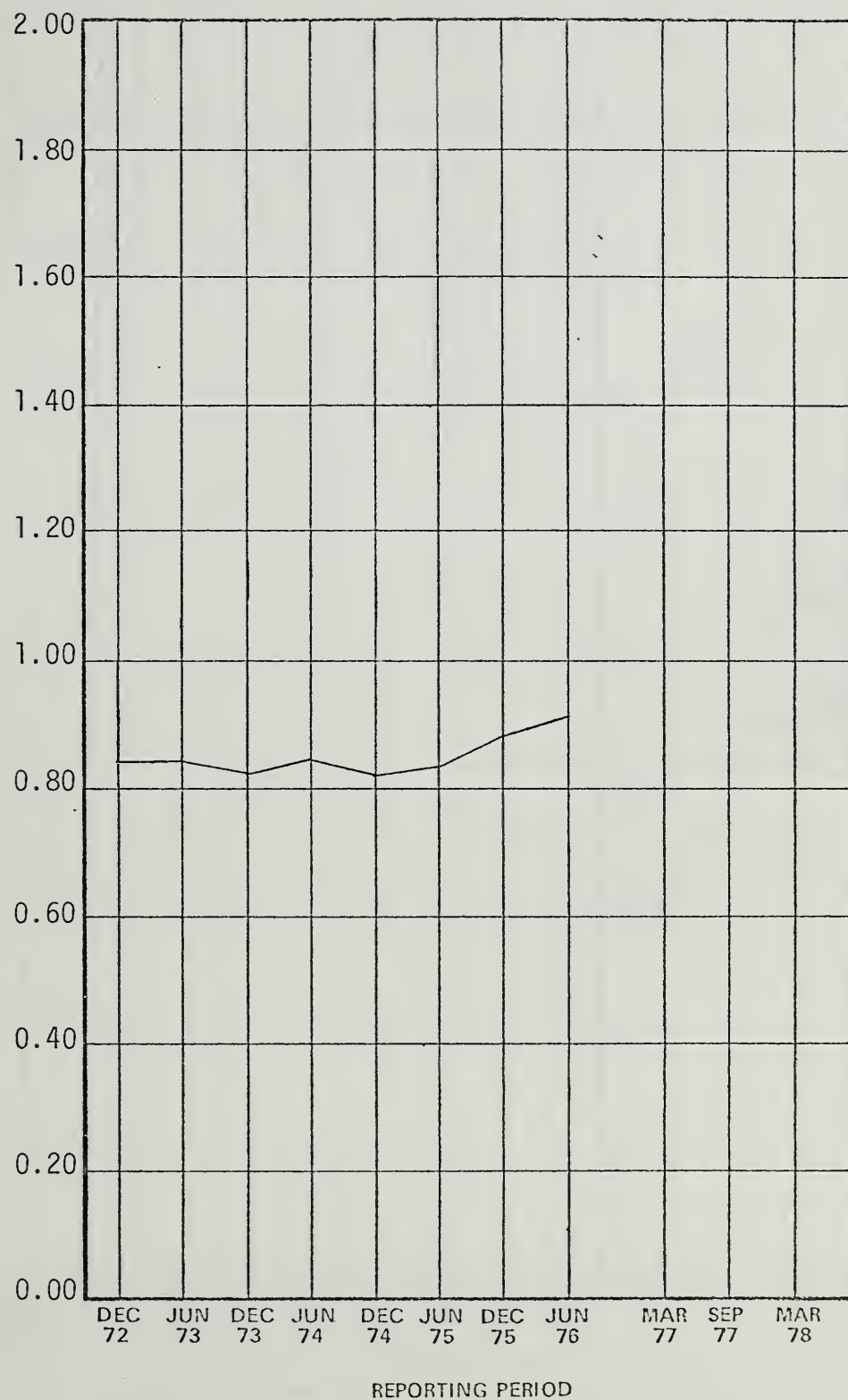


Figure 47

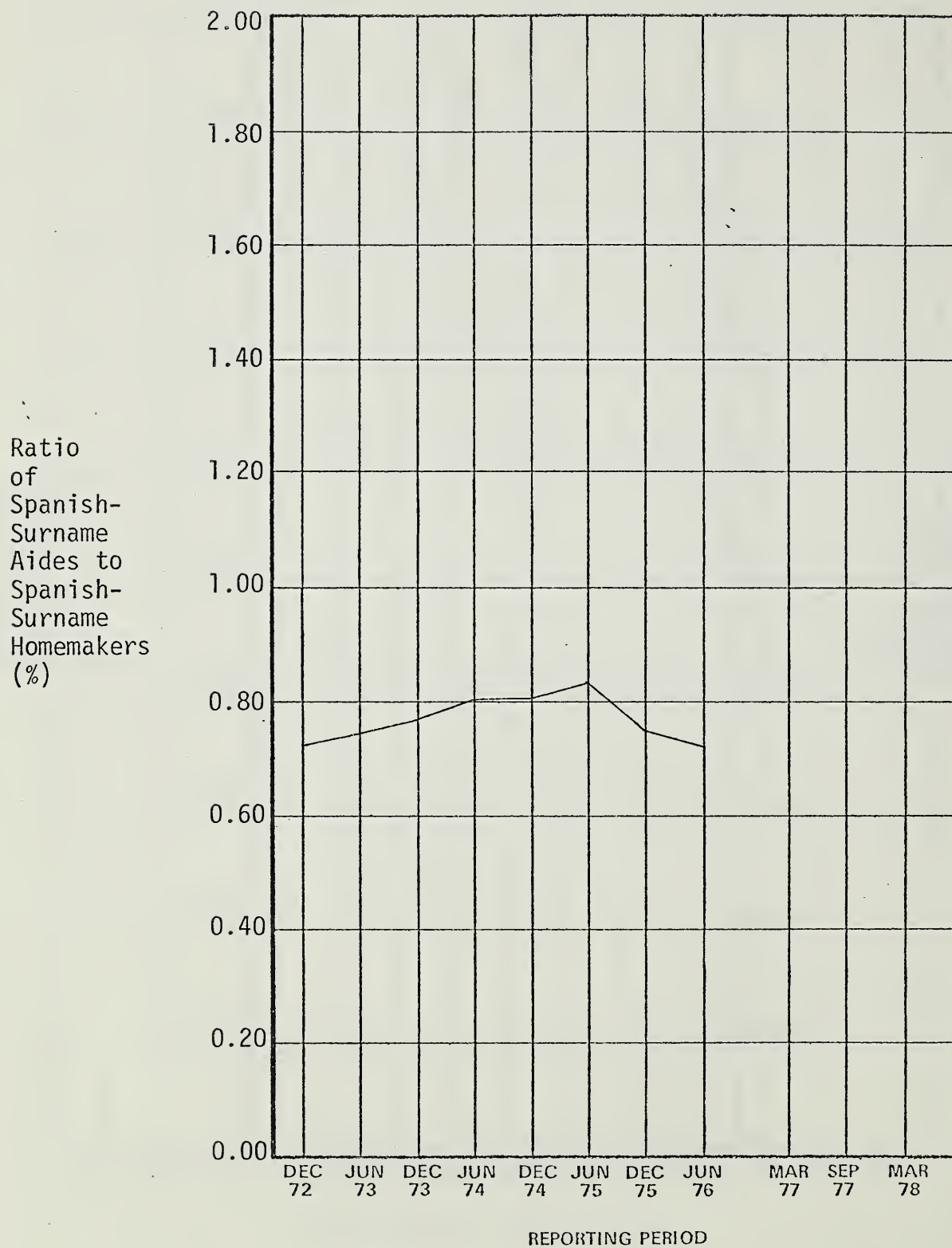


Figure 48

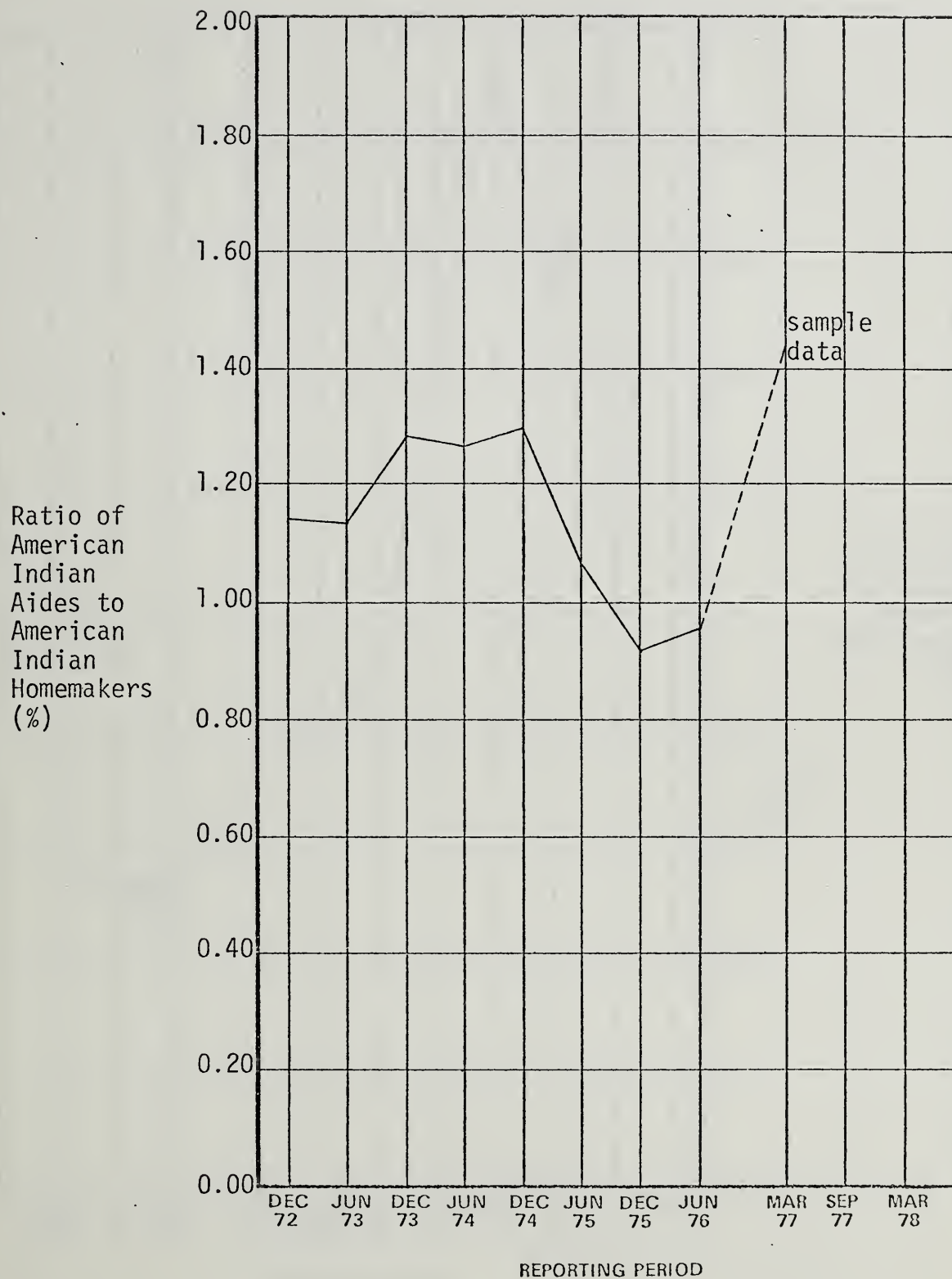


Figure 49

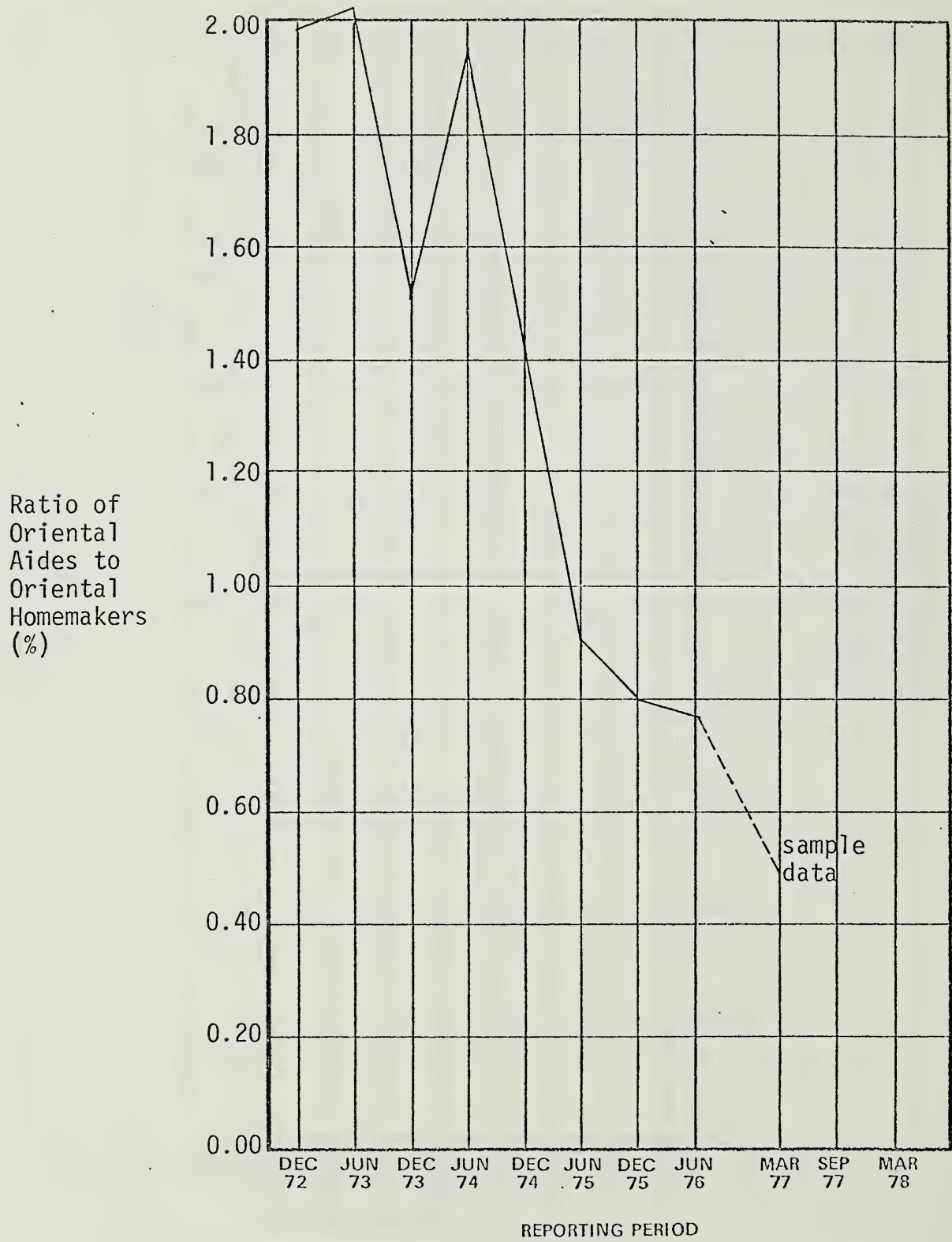


Figure 50

Ratio of
"Other"
Aides to
Oriental
Homemakers

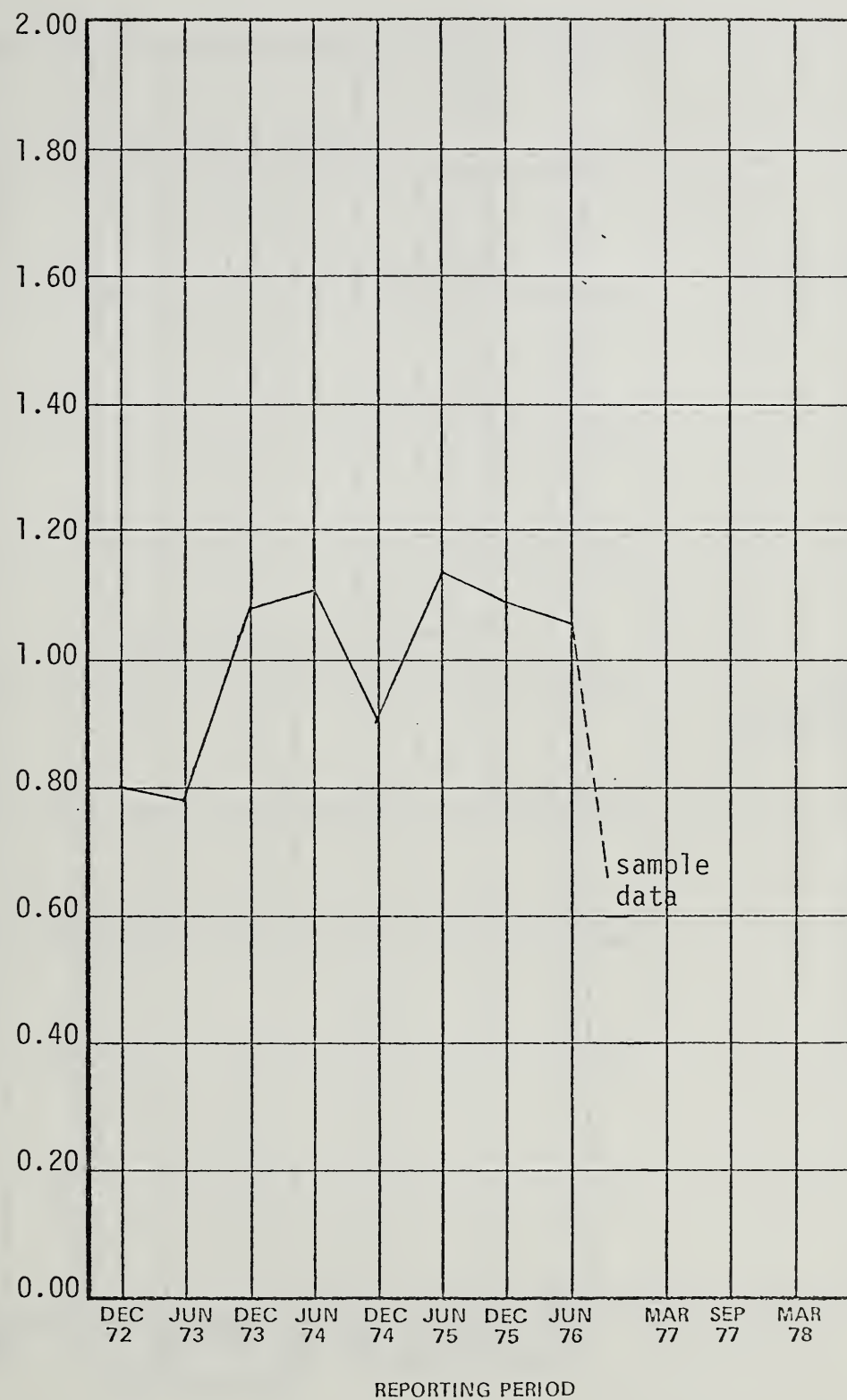


Figure 51

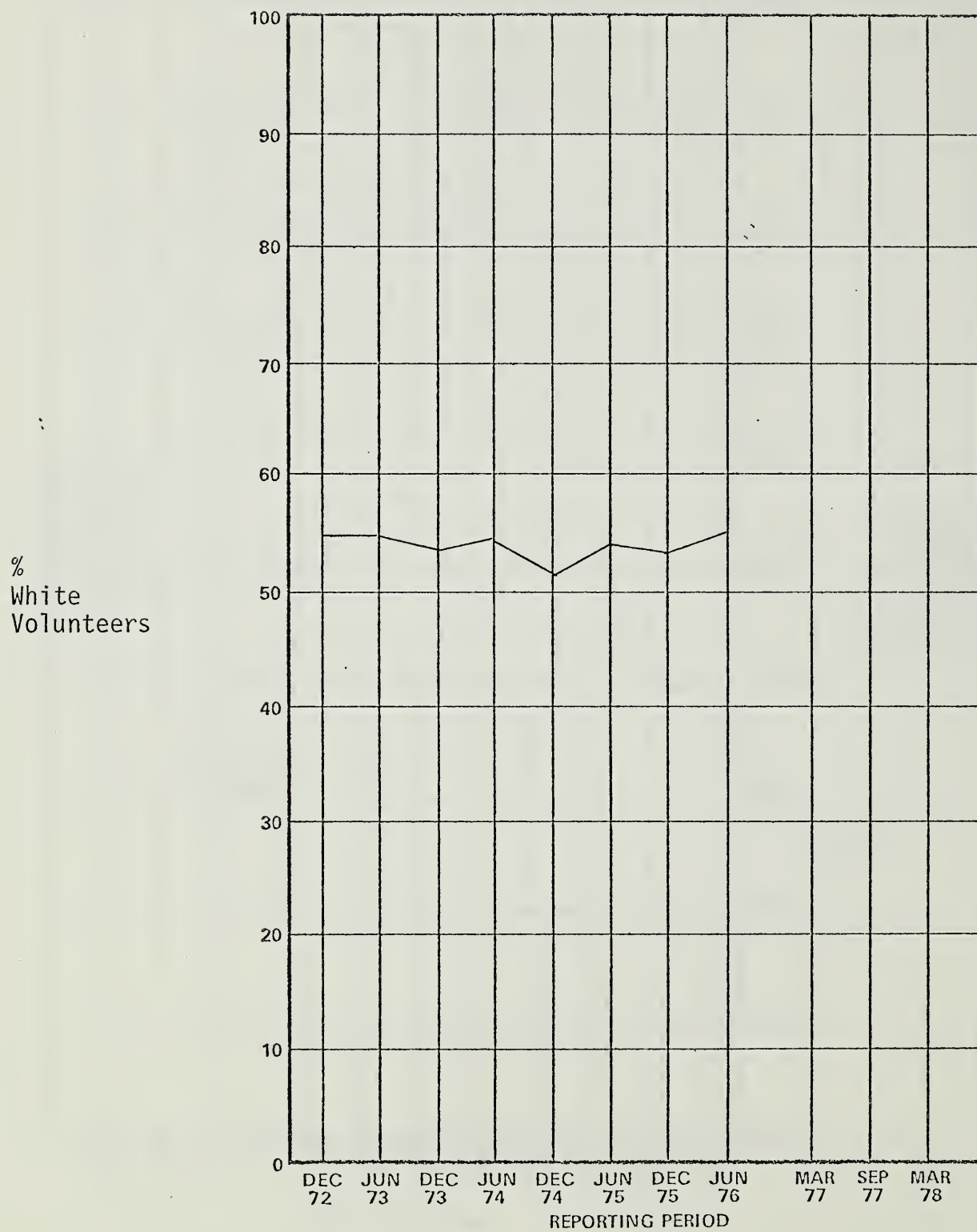


Figure 52

% Black
Volunteers

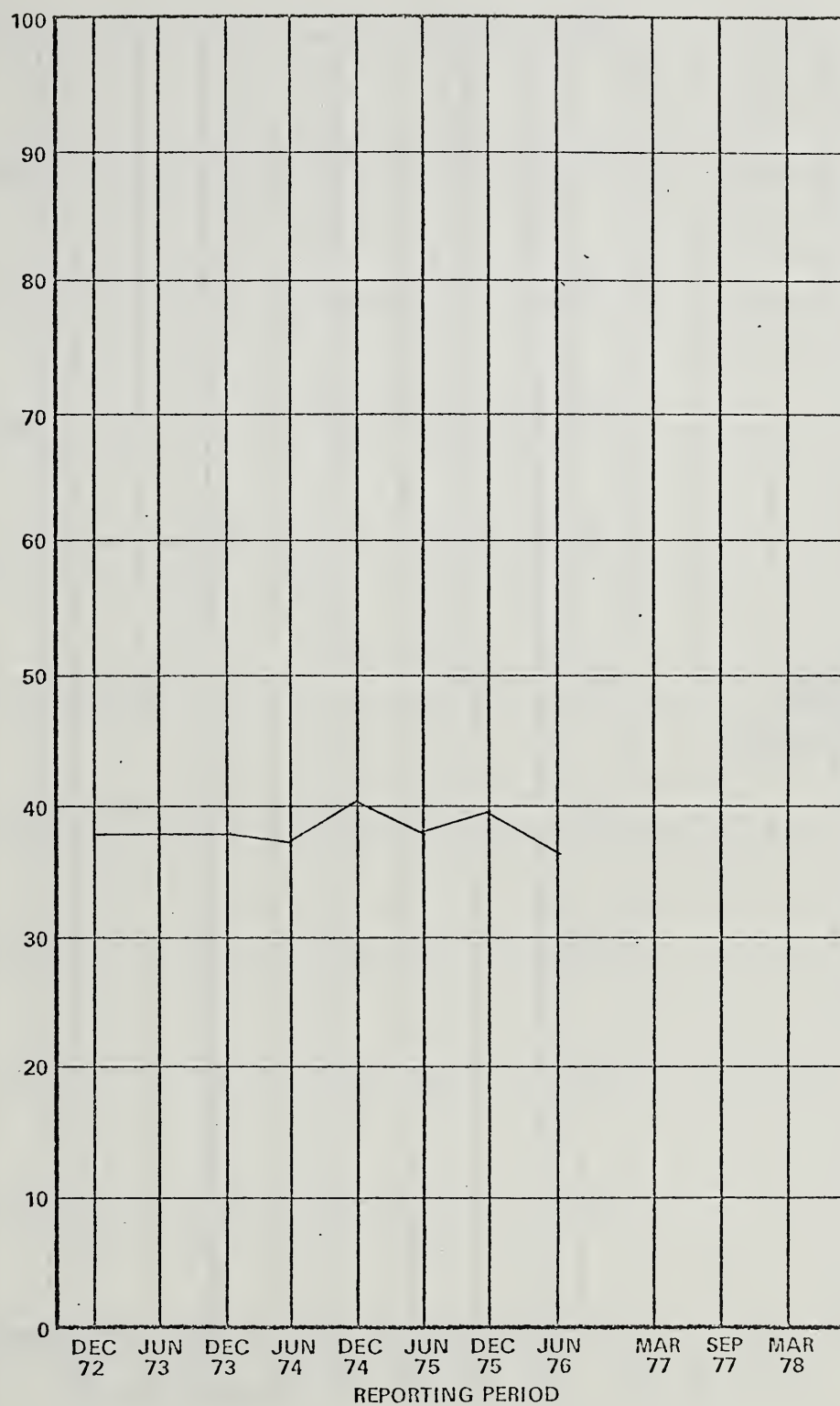


Figure 53

%
Spanish-
Surname
Volunteers

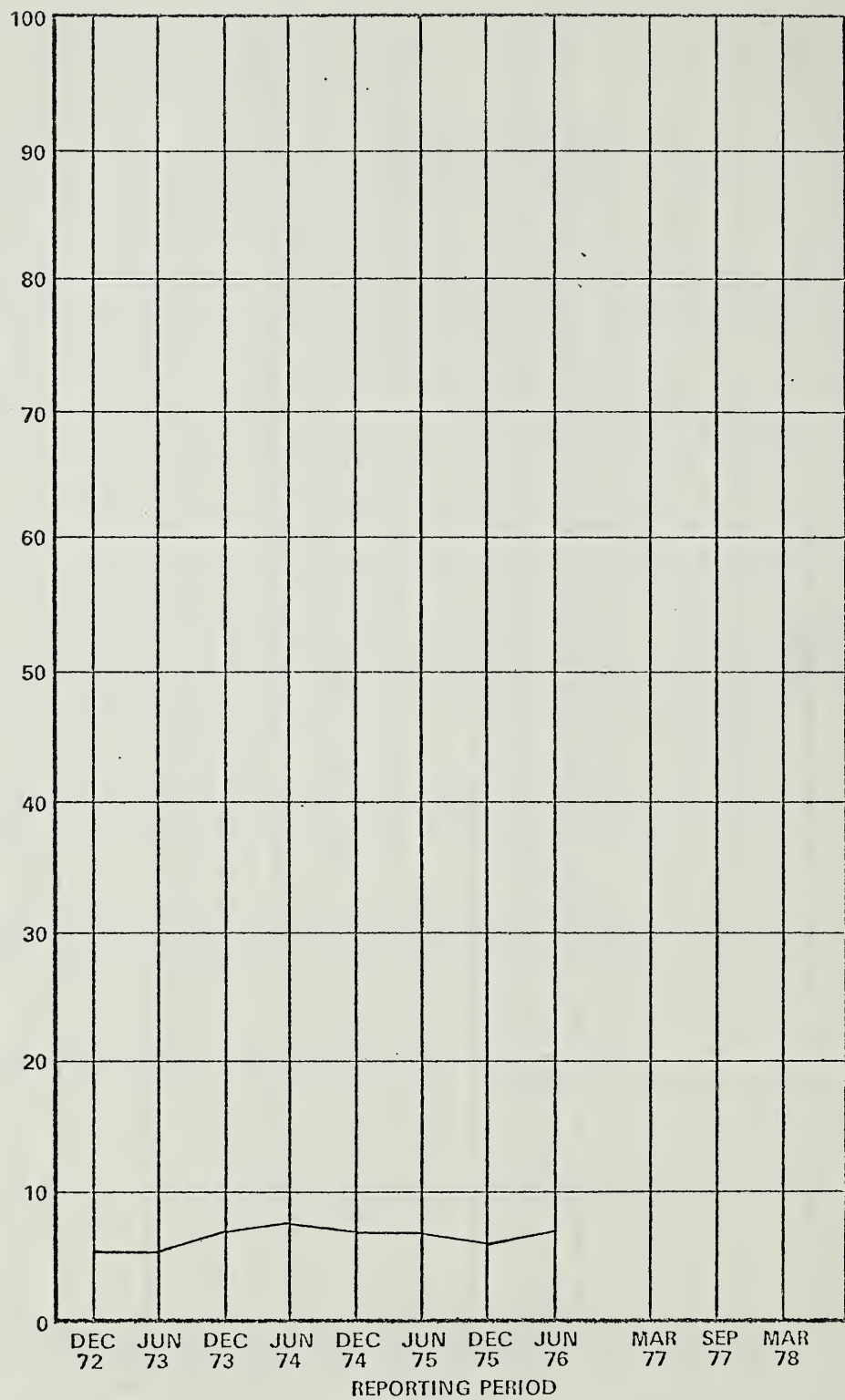


Figure 54

%
American
Indian
Volunteers

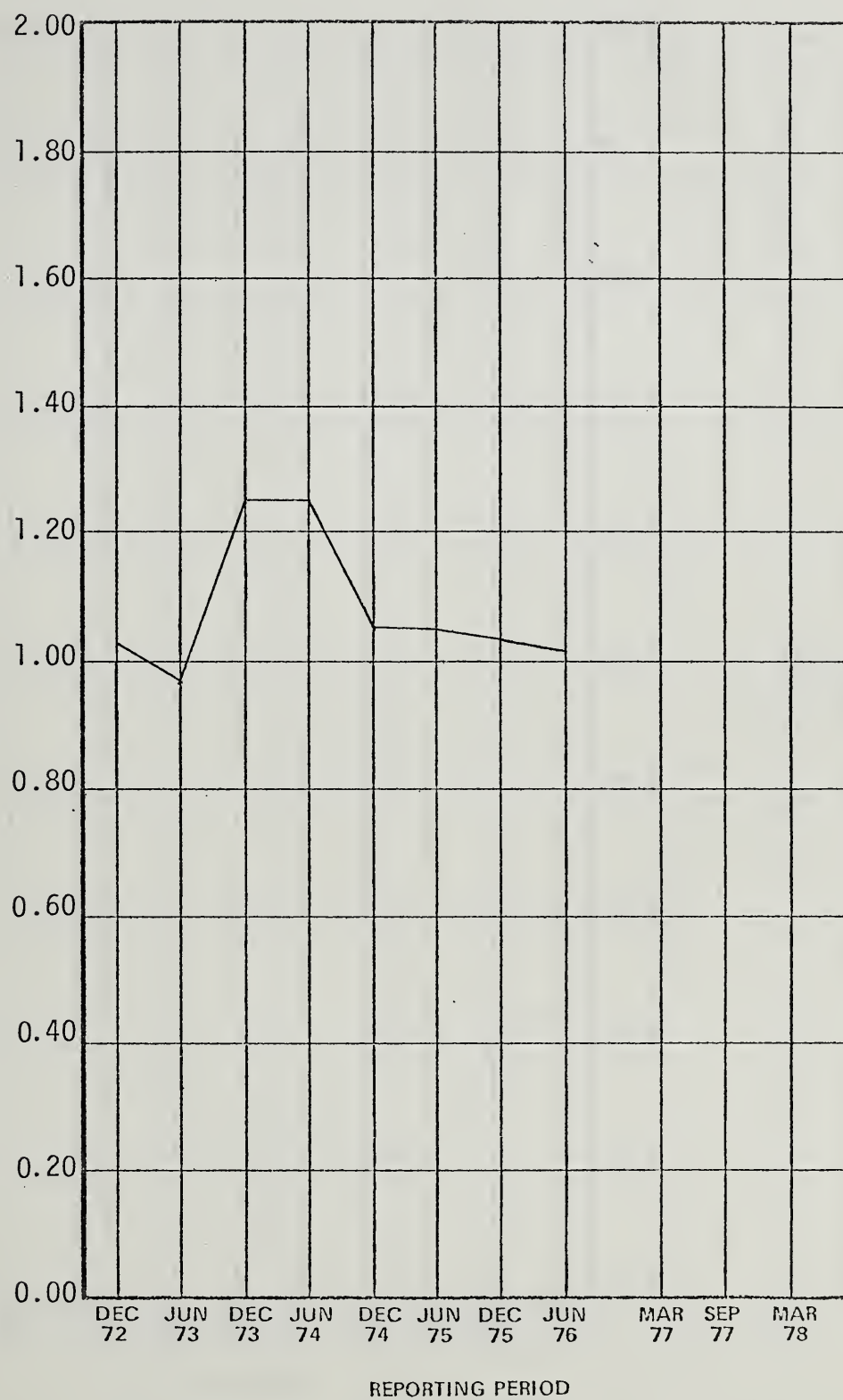


Figure 55

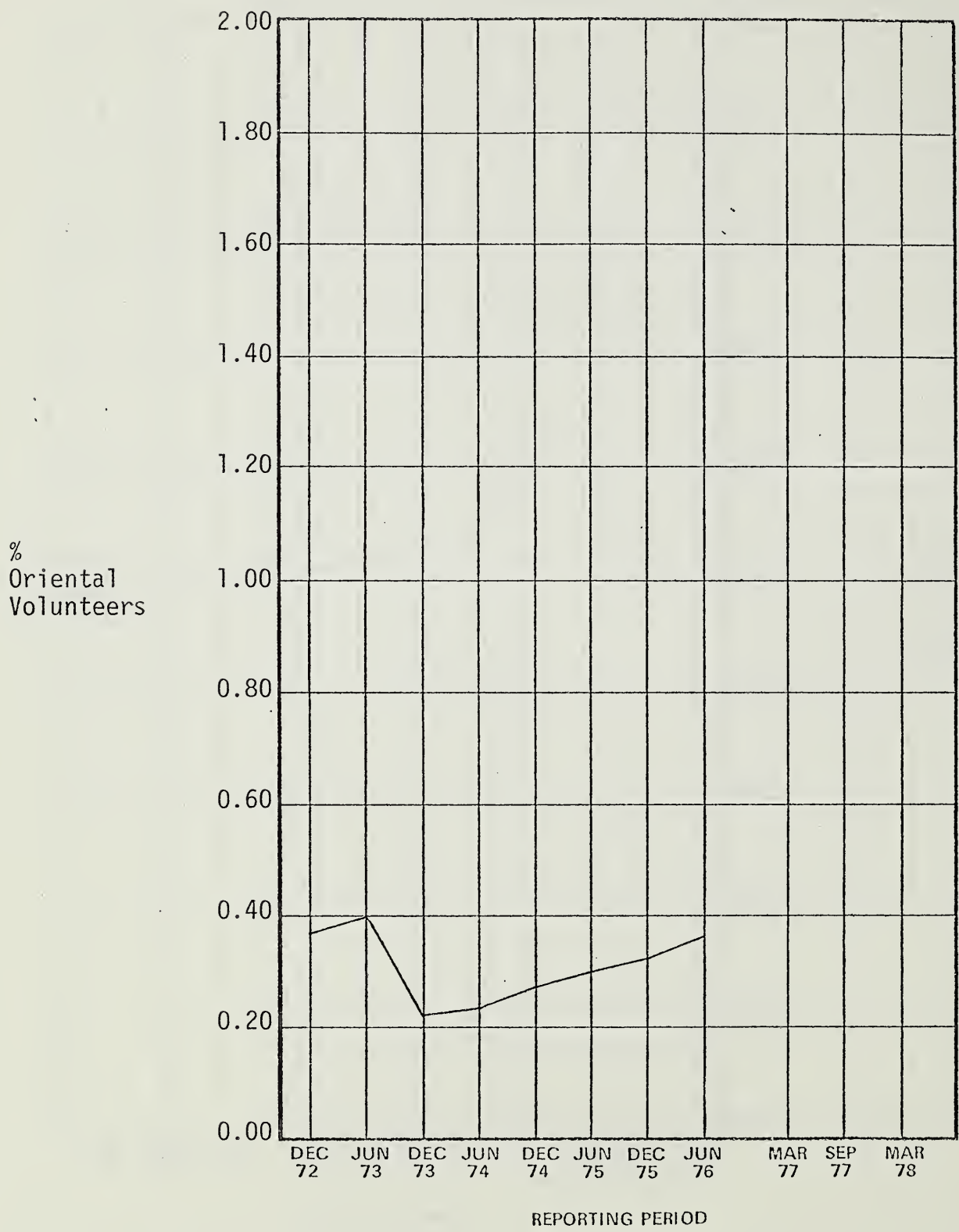


Figure 56

%
"Other"
Volunteers

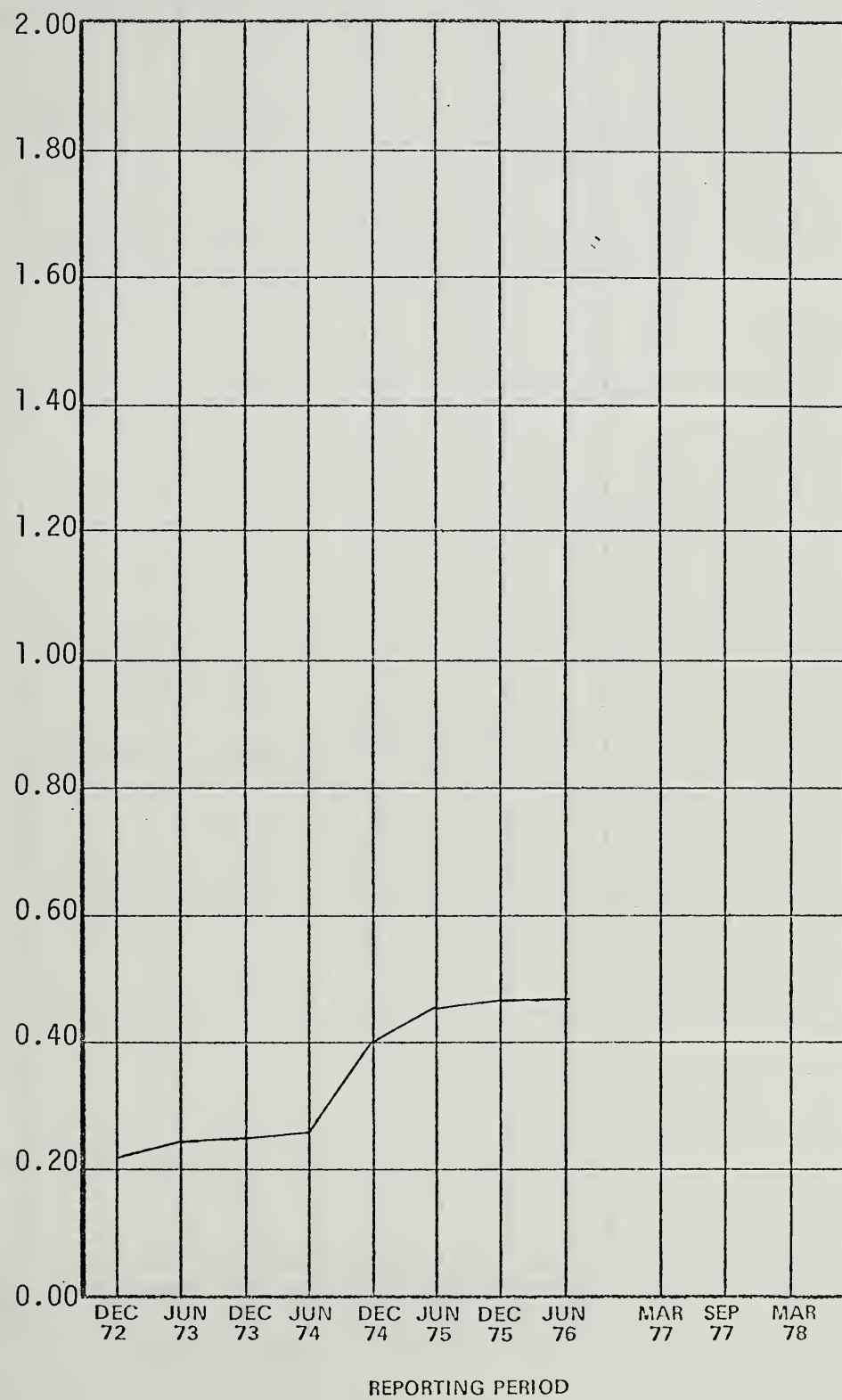


Figure 57

%
White
Youth

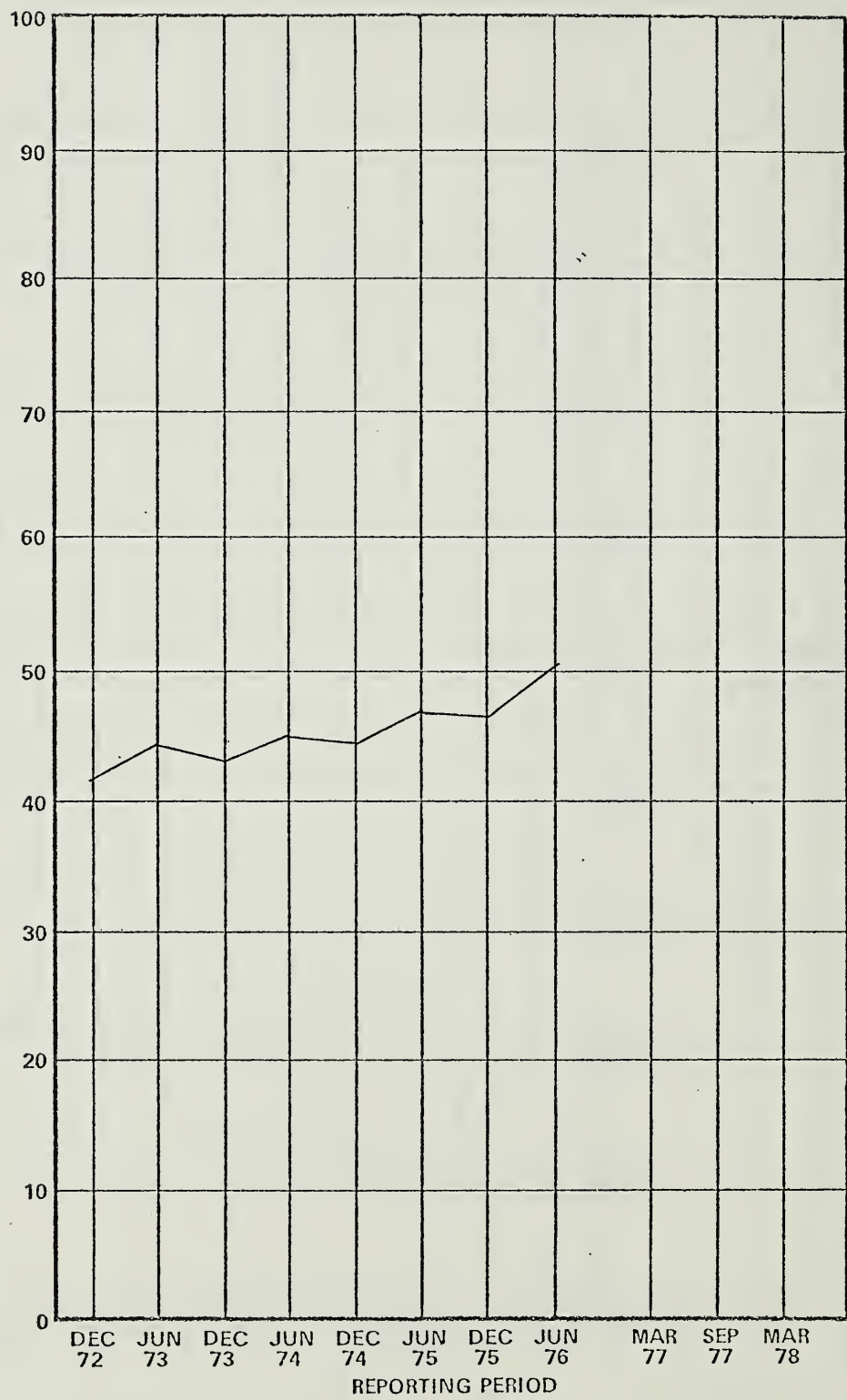


Figure 58

%
Black
Youth

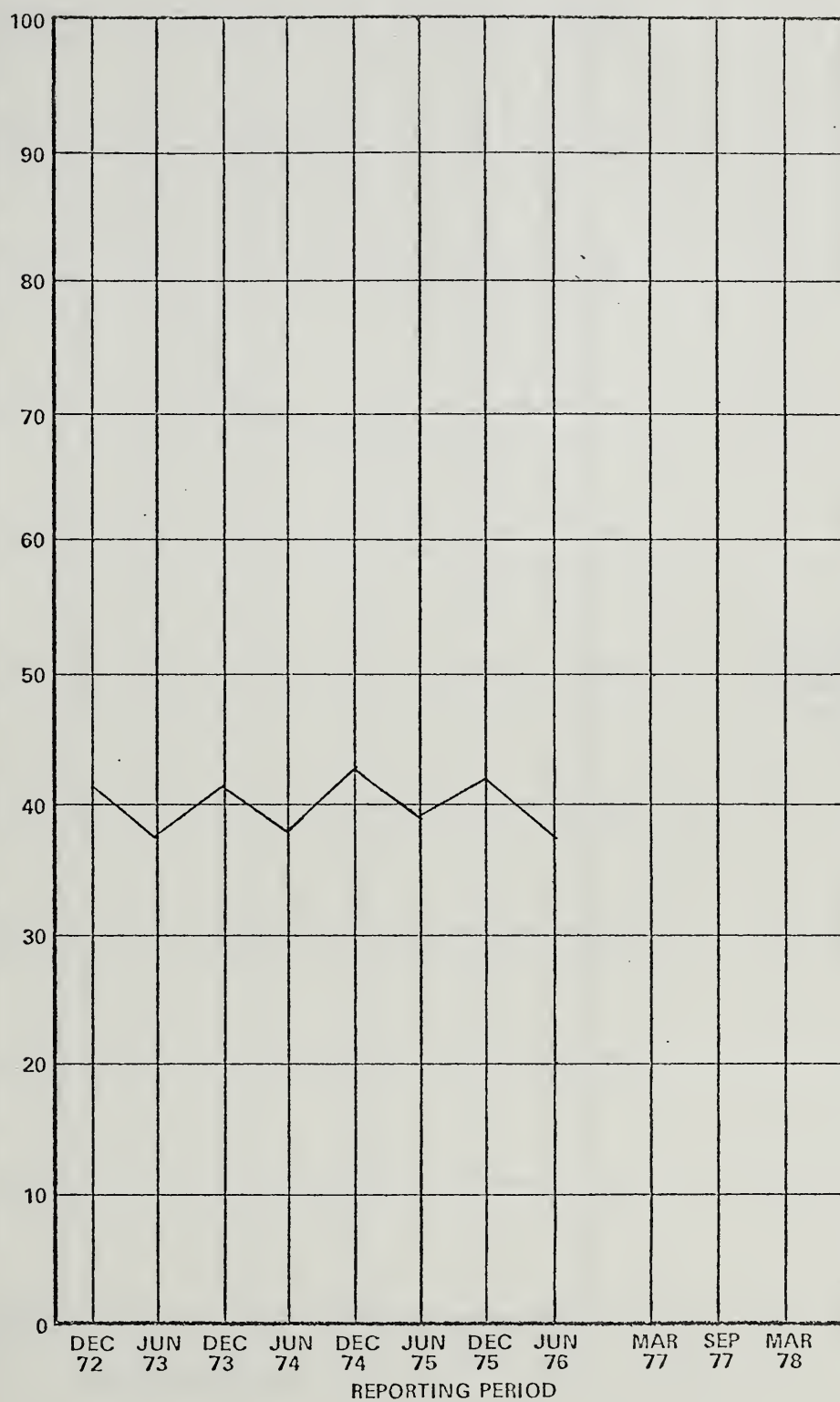


Figure 59

%
Spanish-
Surname
Youth

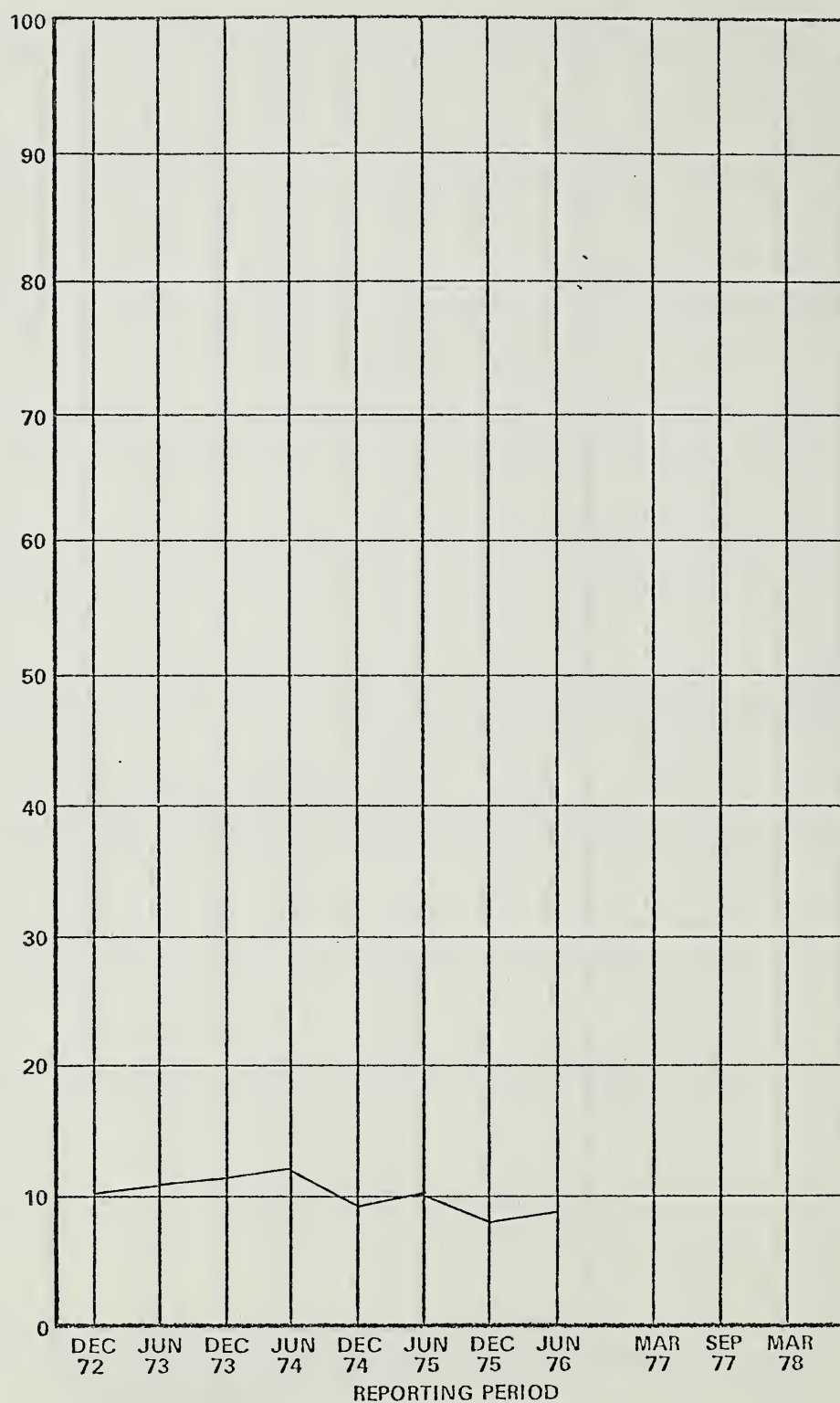


Figure 60

%
American
Indian
Youth
(Note
Expanded
Percentage
Scale)

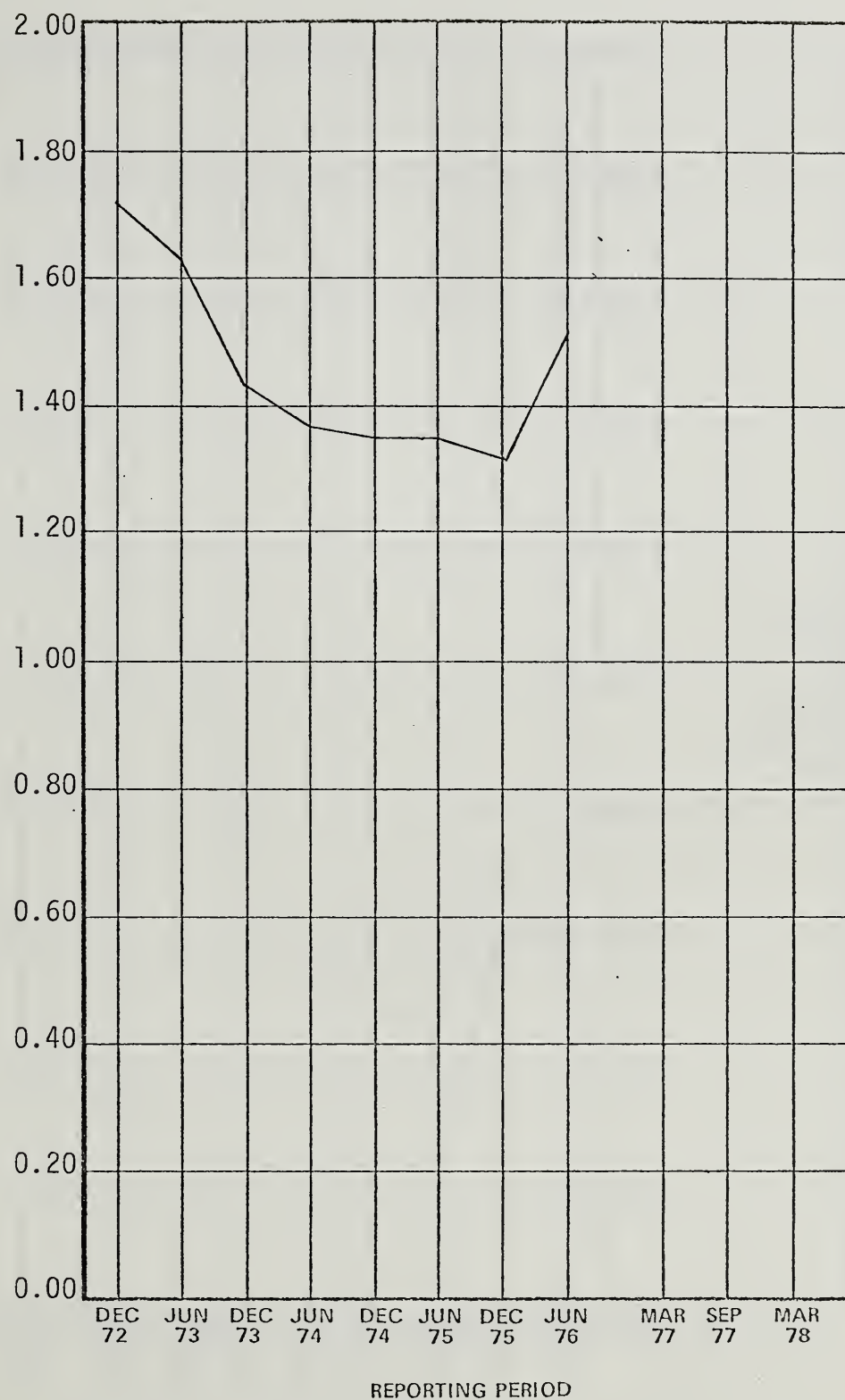


Figure 61

%
Oriental
Youth
(Note
Expanded
Percentage
Scale)

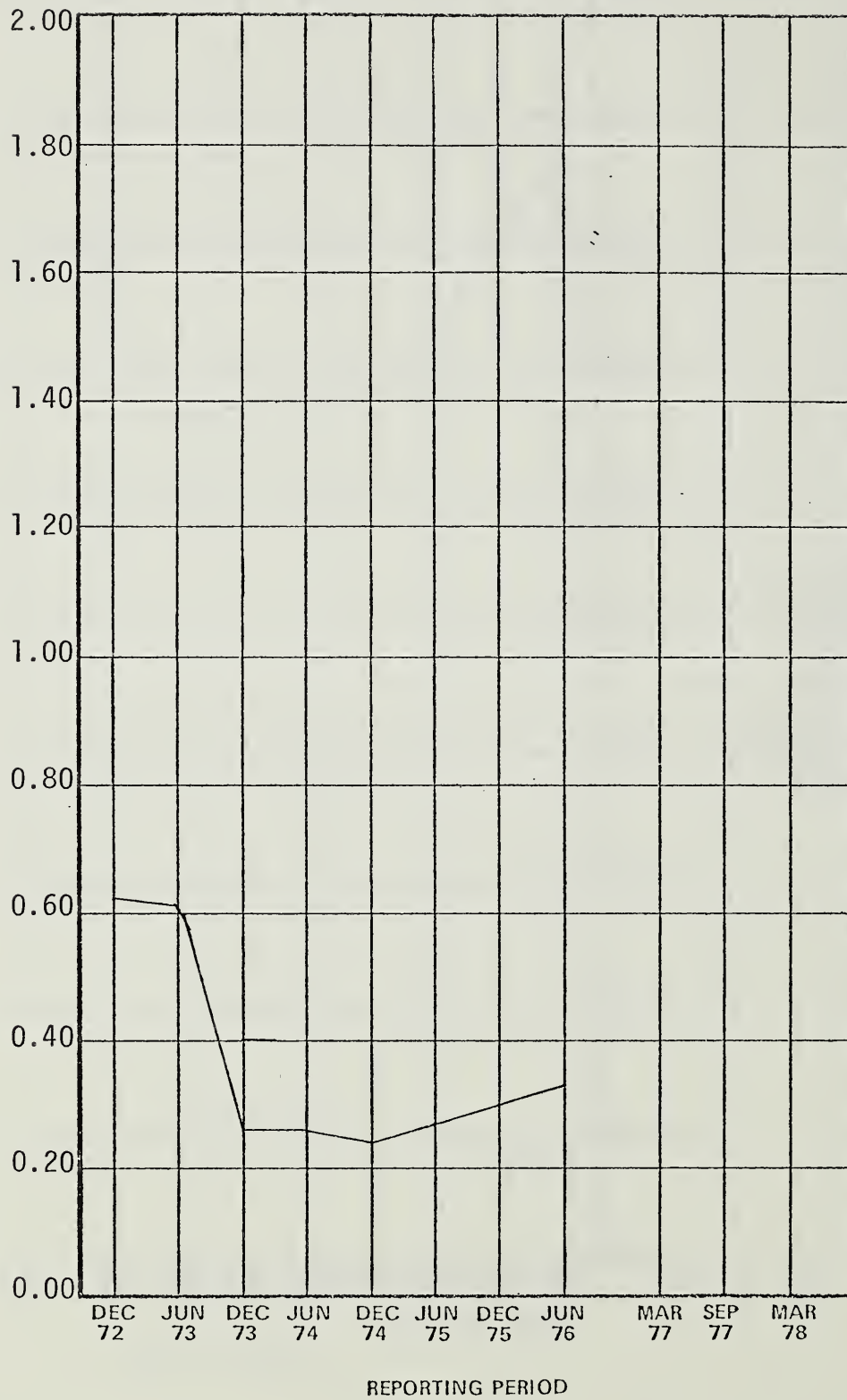


Figure 62

%
"Other"
Youth
(Note
Expanded
Percentage
Scale)

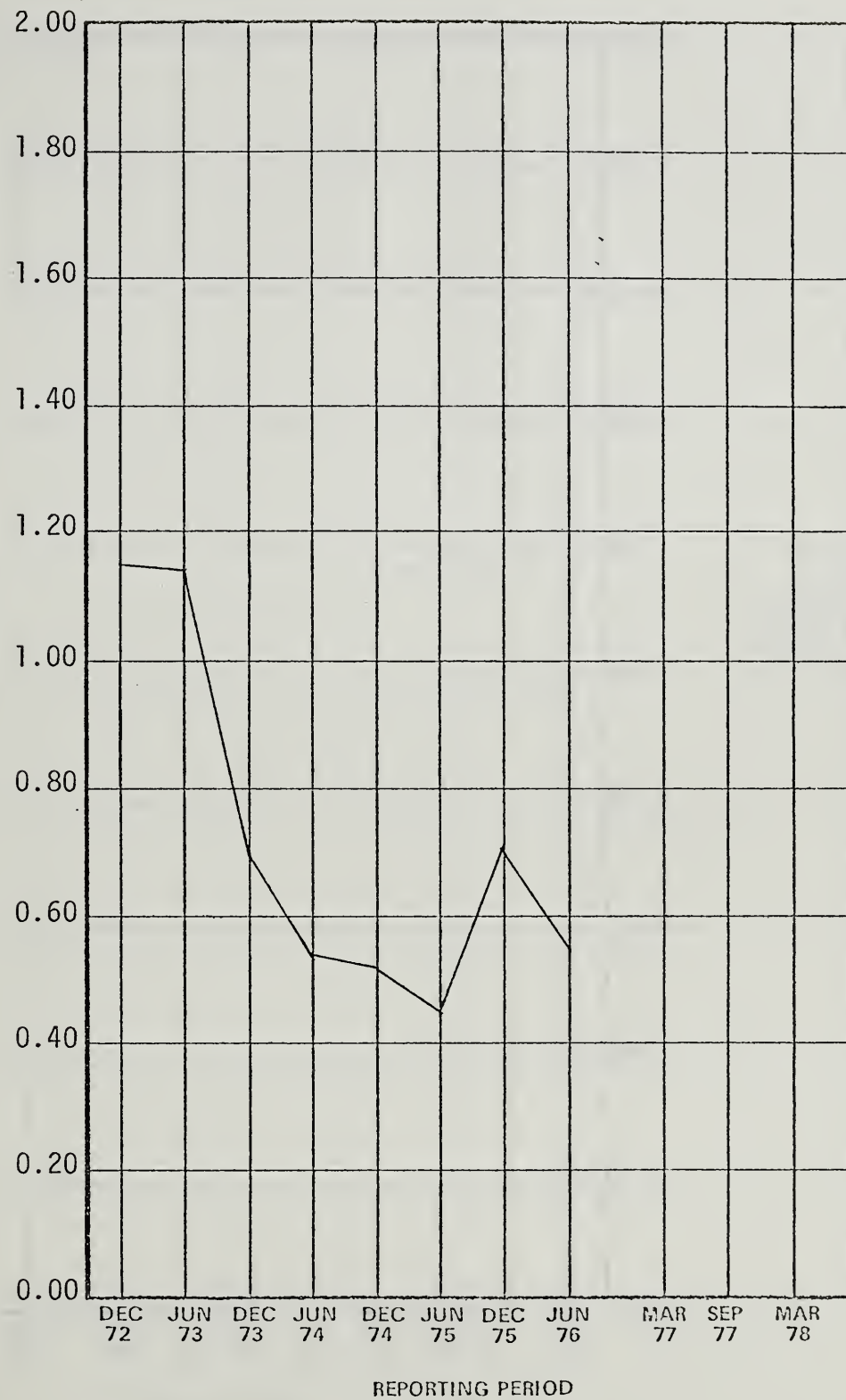


Figure 63

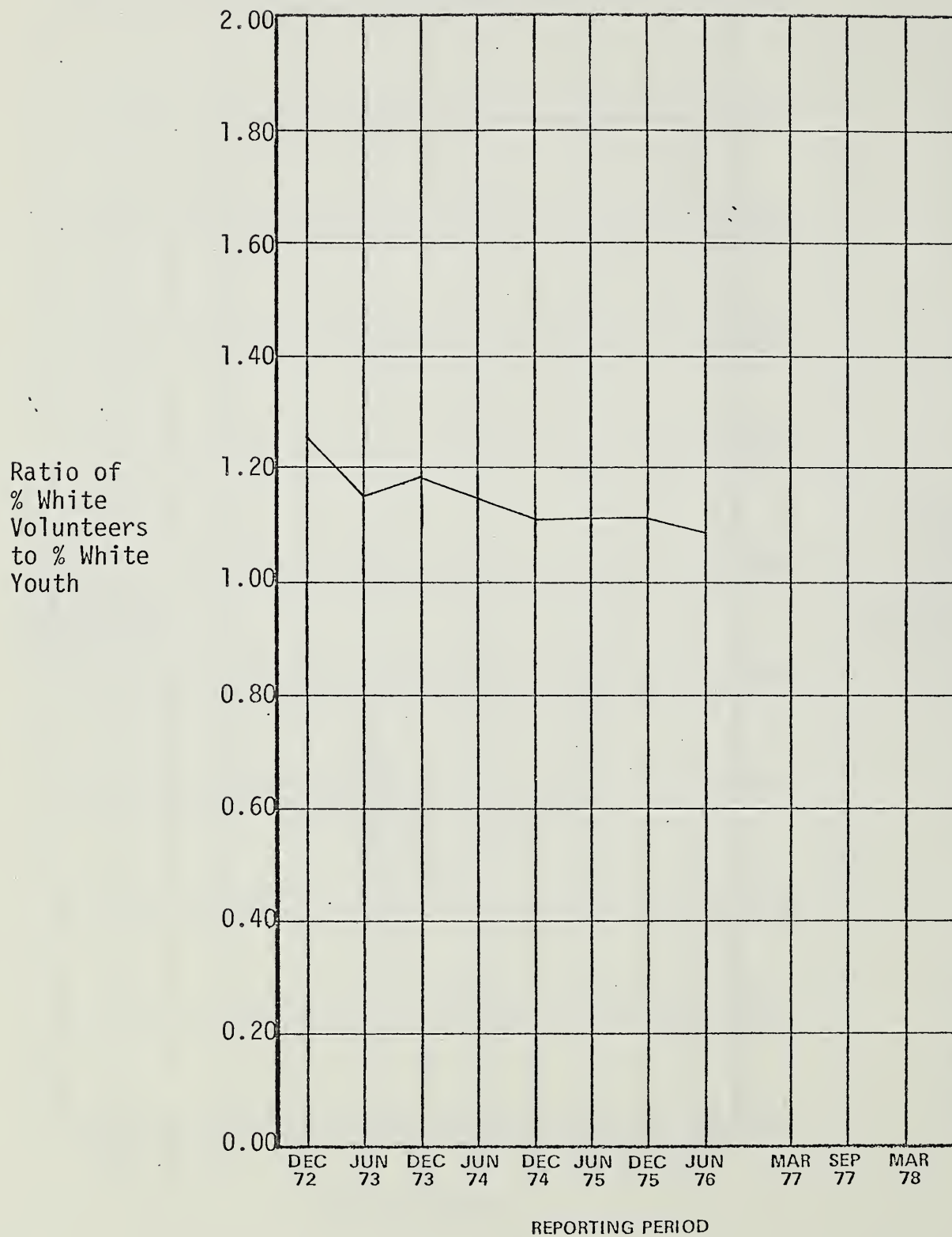


Figure 64

Ratio of
% Black
Volunteers
to %
Black
Youth

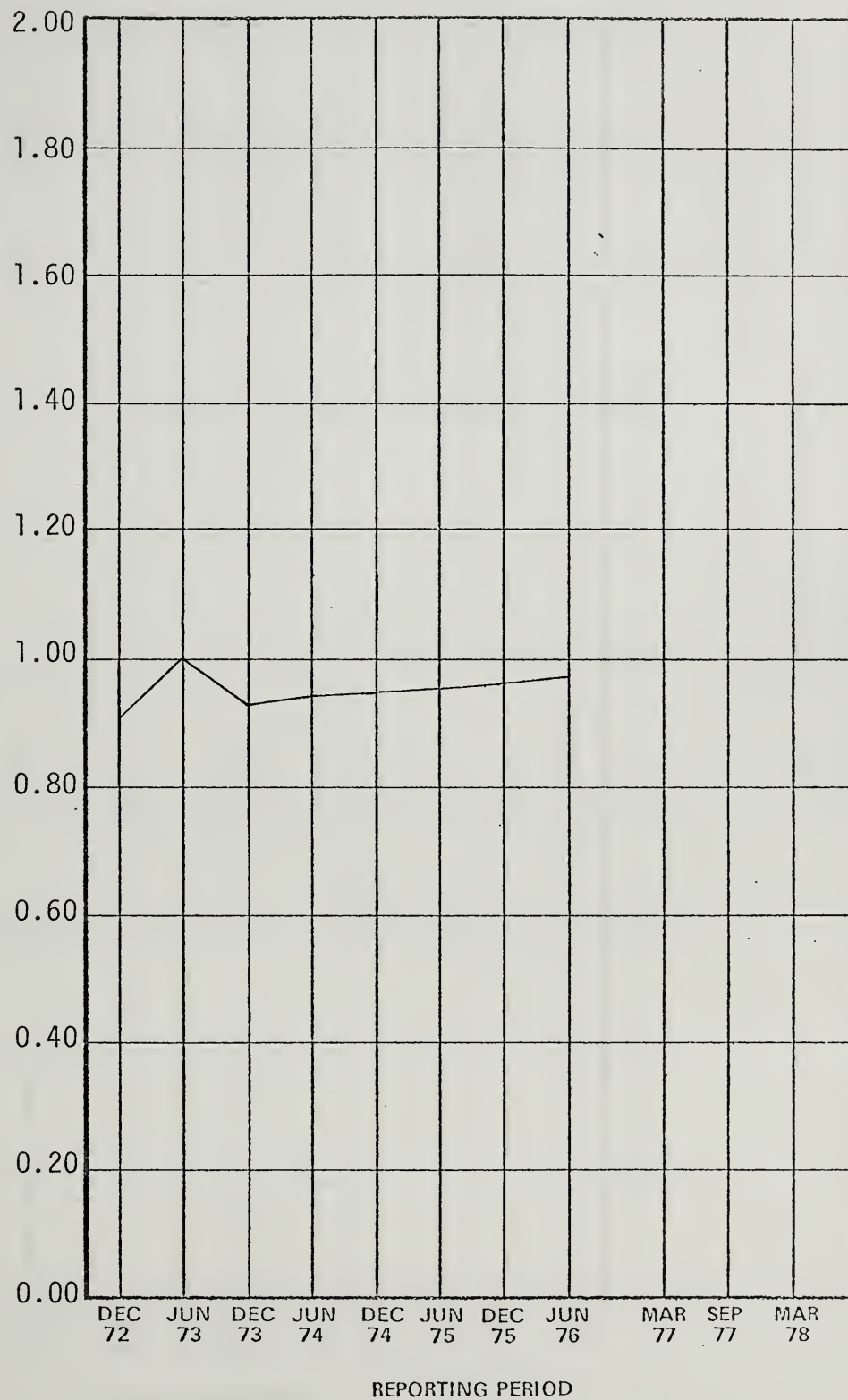


Figure 65

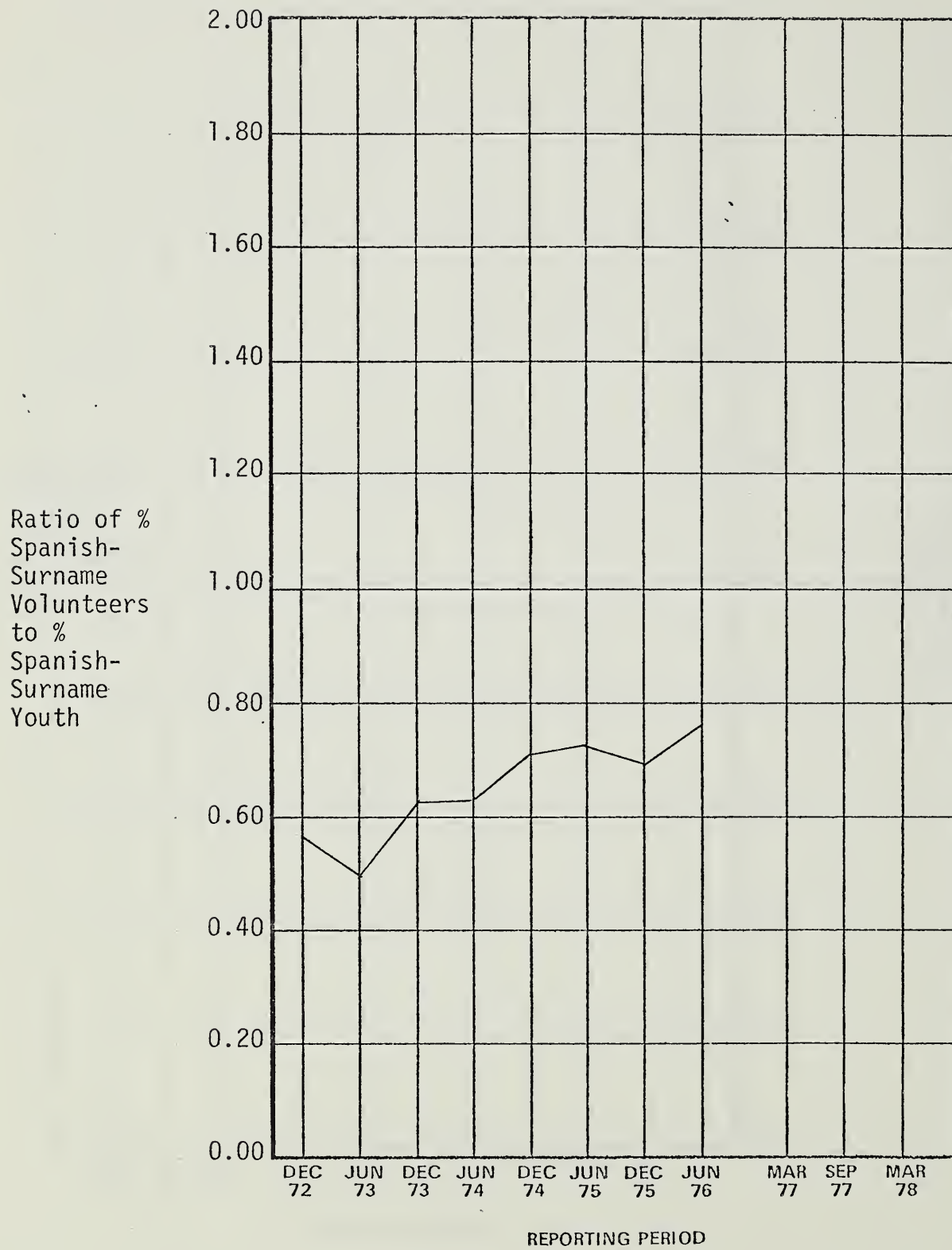


Figure 66

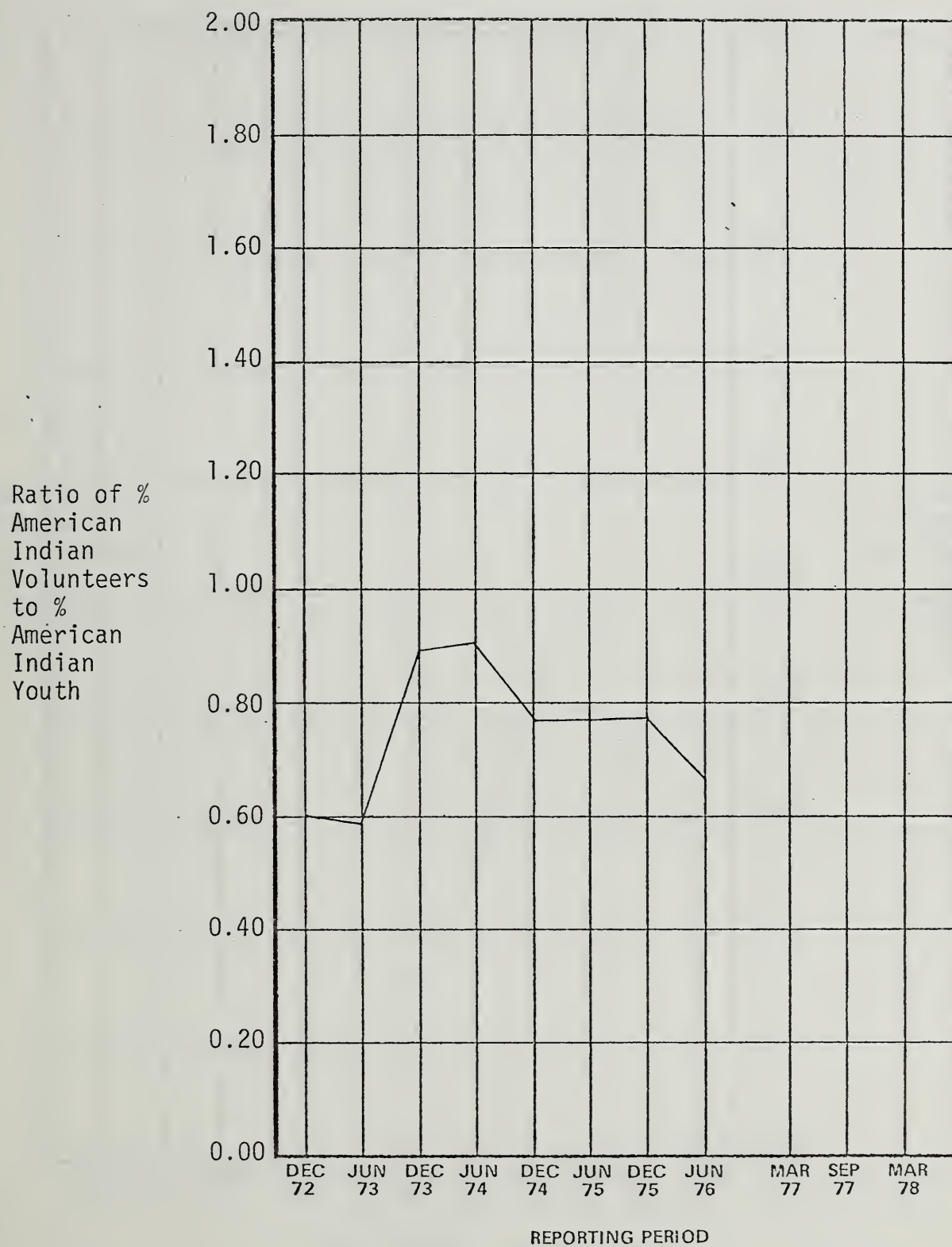


Figure 67

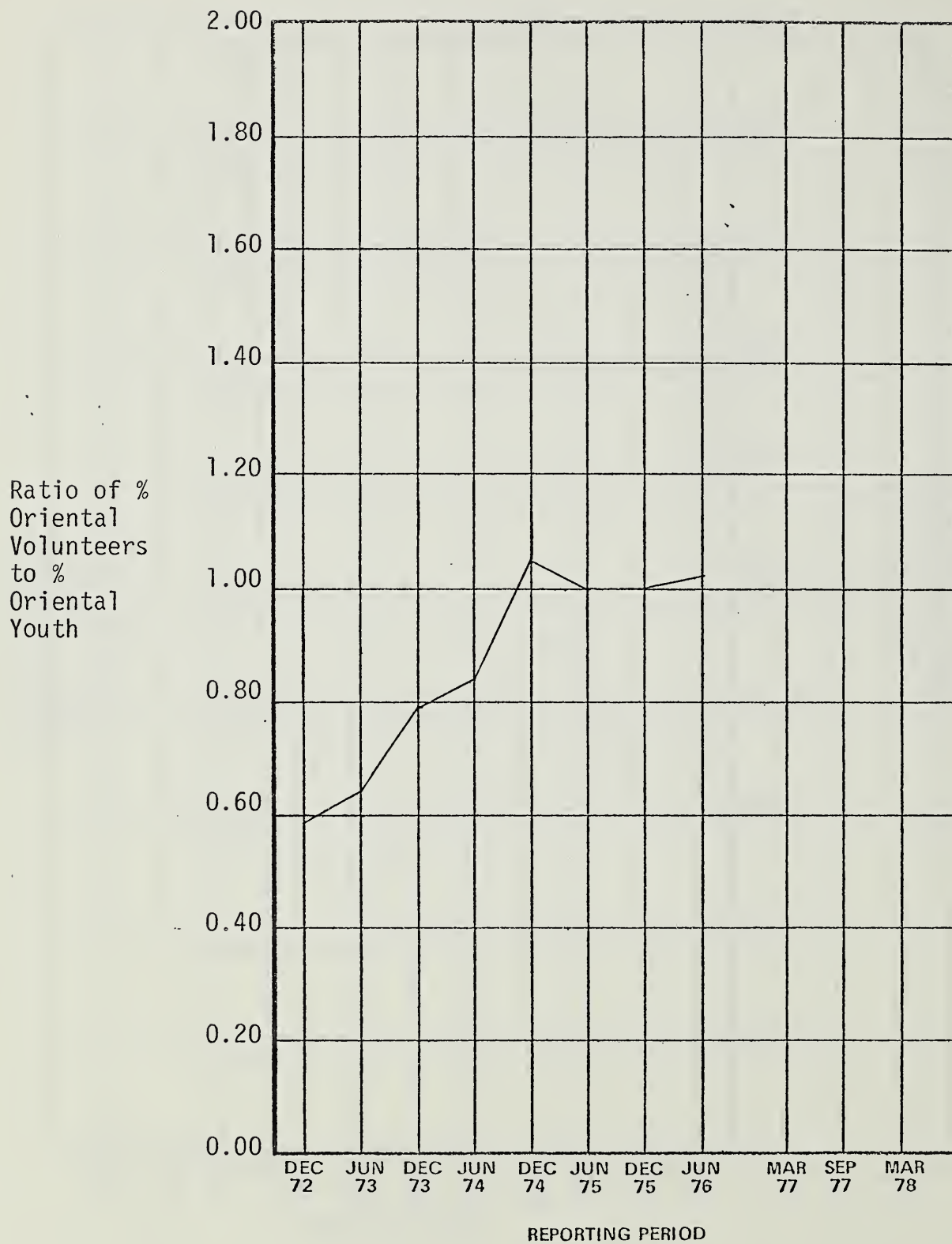


Figure 68

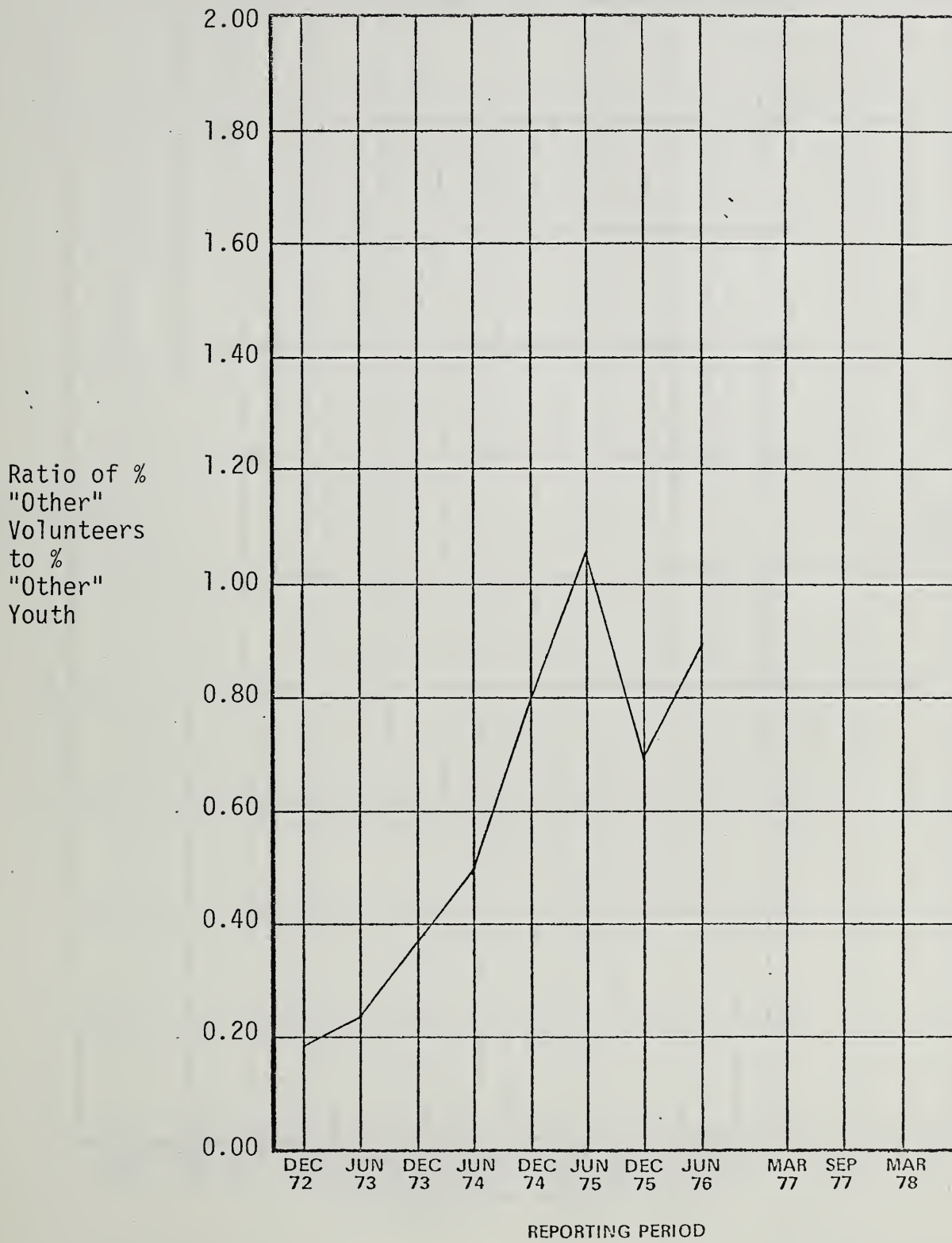


Figure 69

% of Girls
Under 9 Years

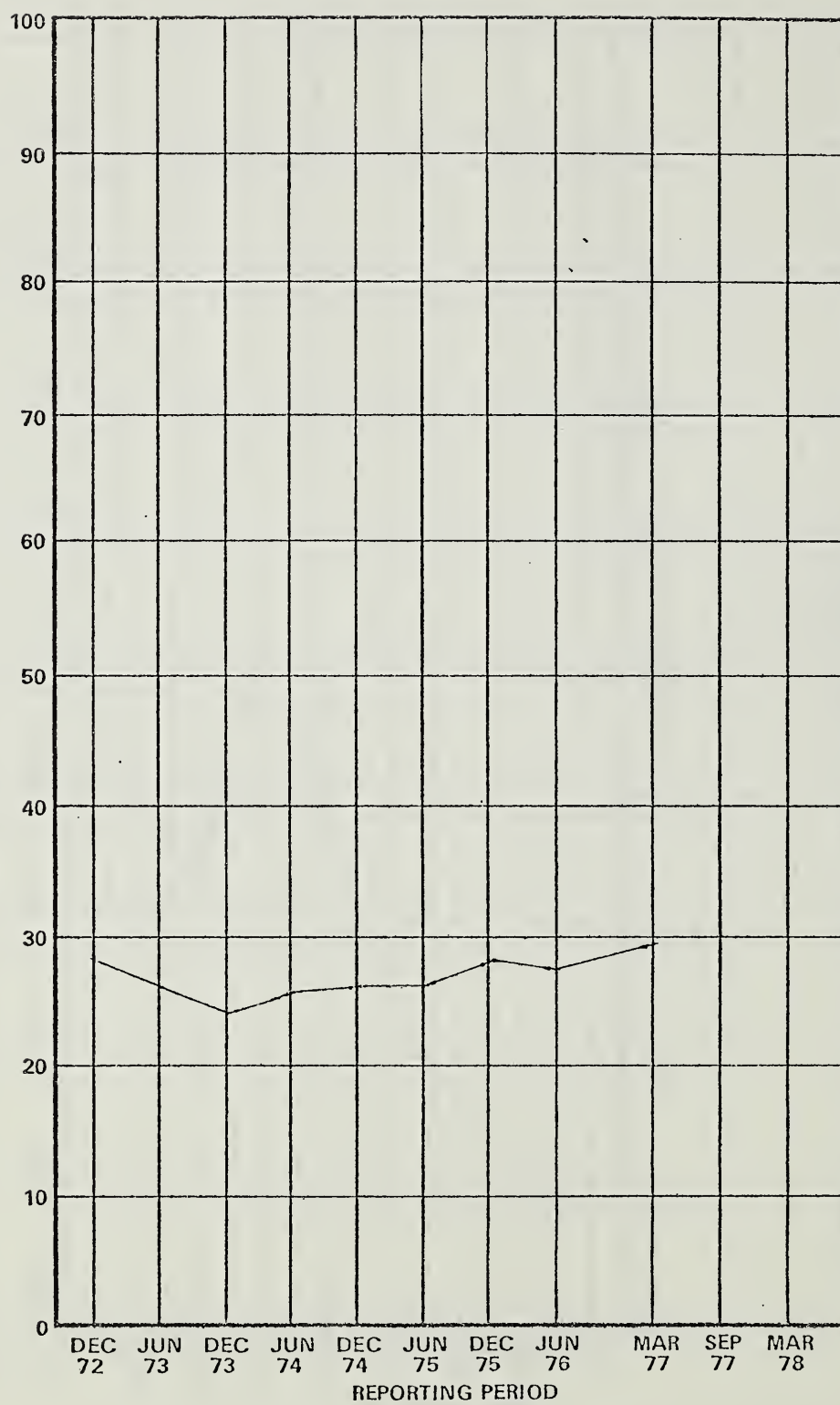


Figure 70

% of Girls
9-14 Years Old

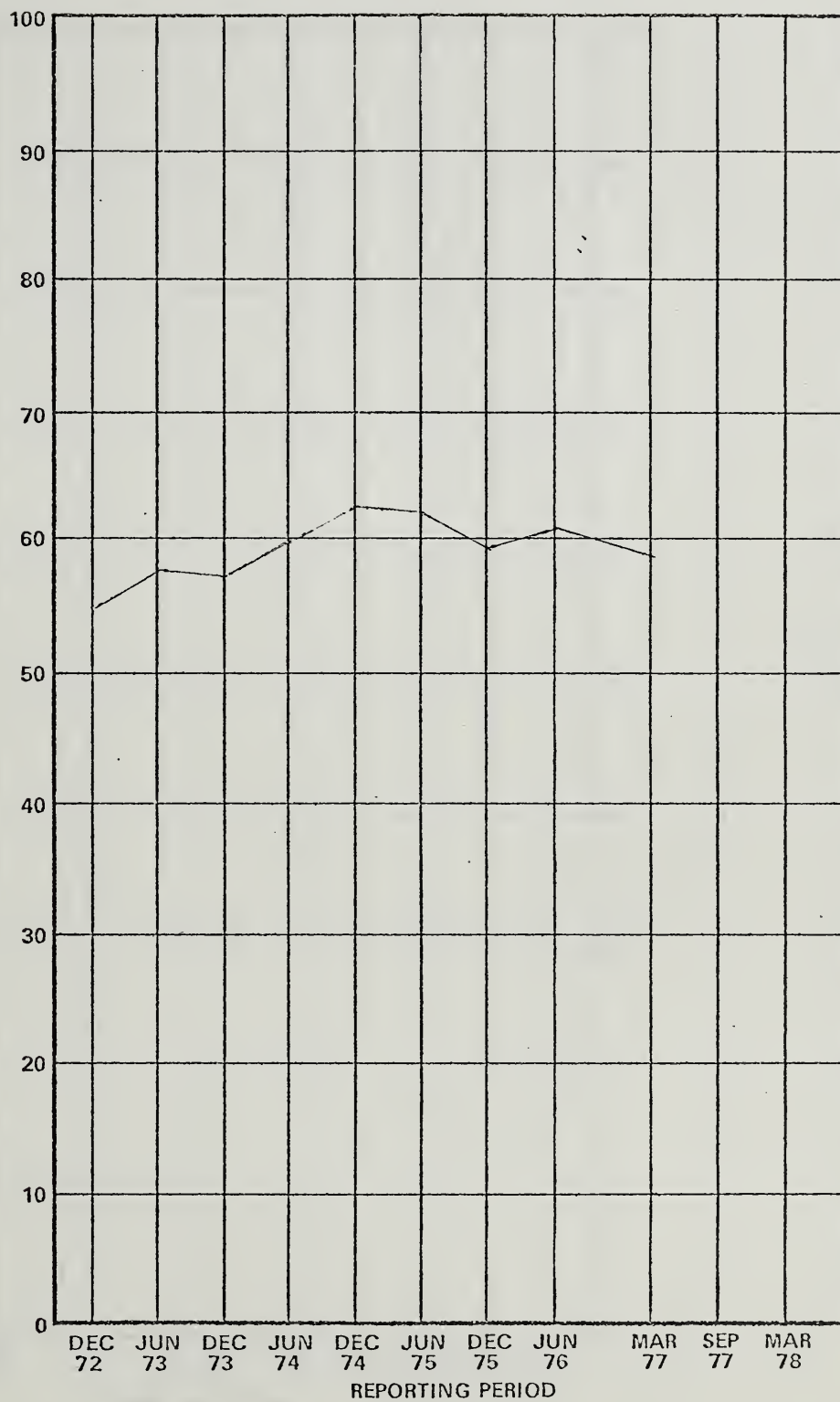


Figure 71

% Girls 14
and Over

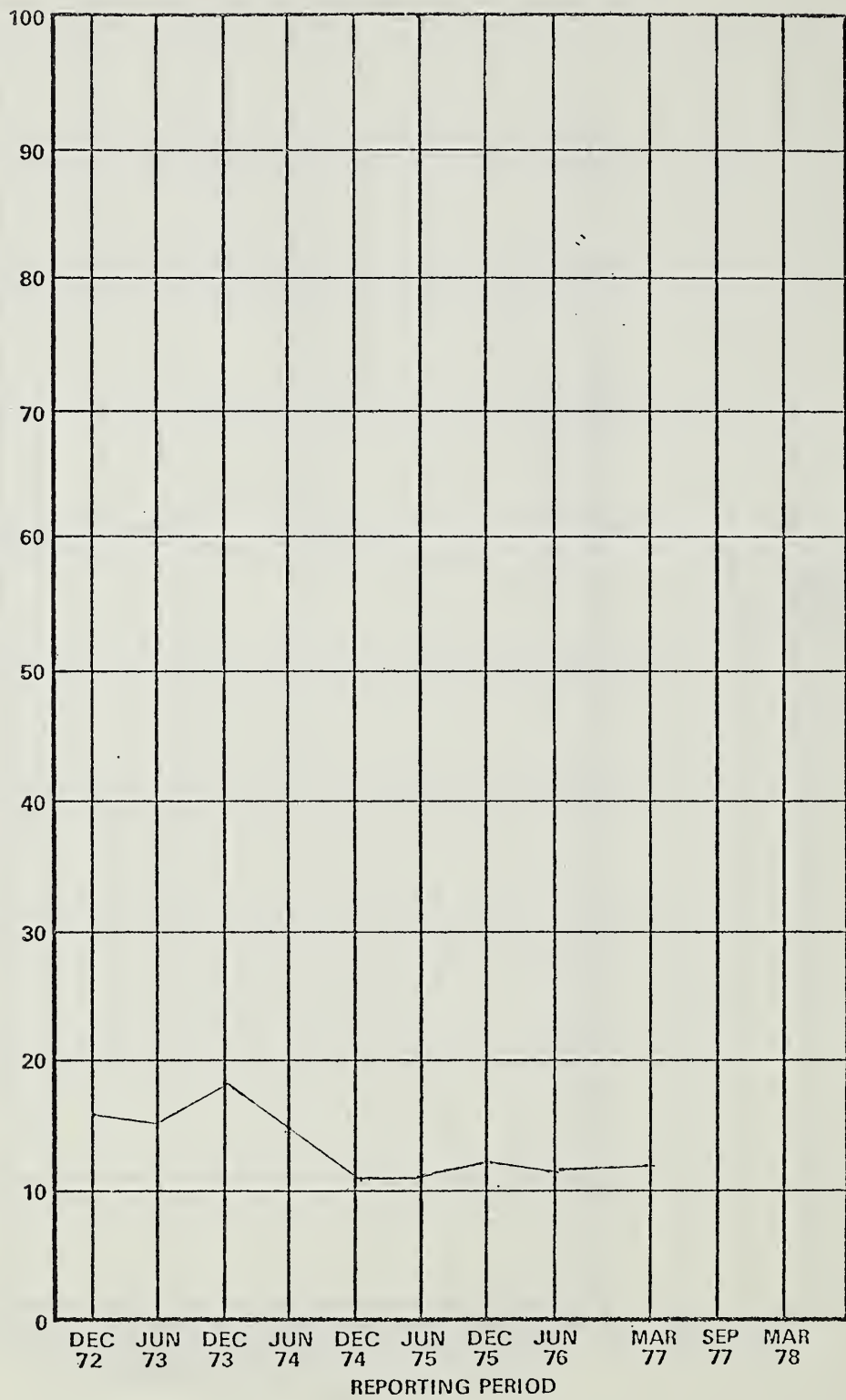


Figure 72

% of Boys
Less Than 9
Years Old

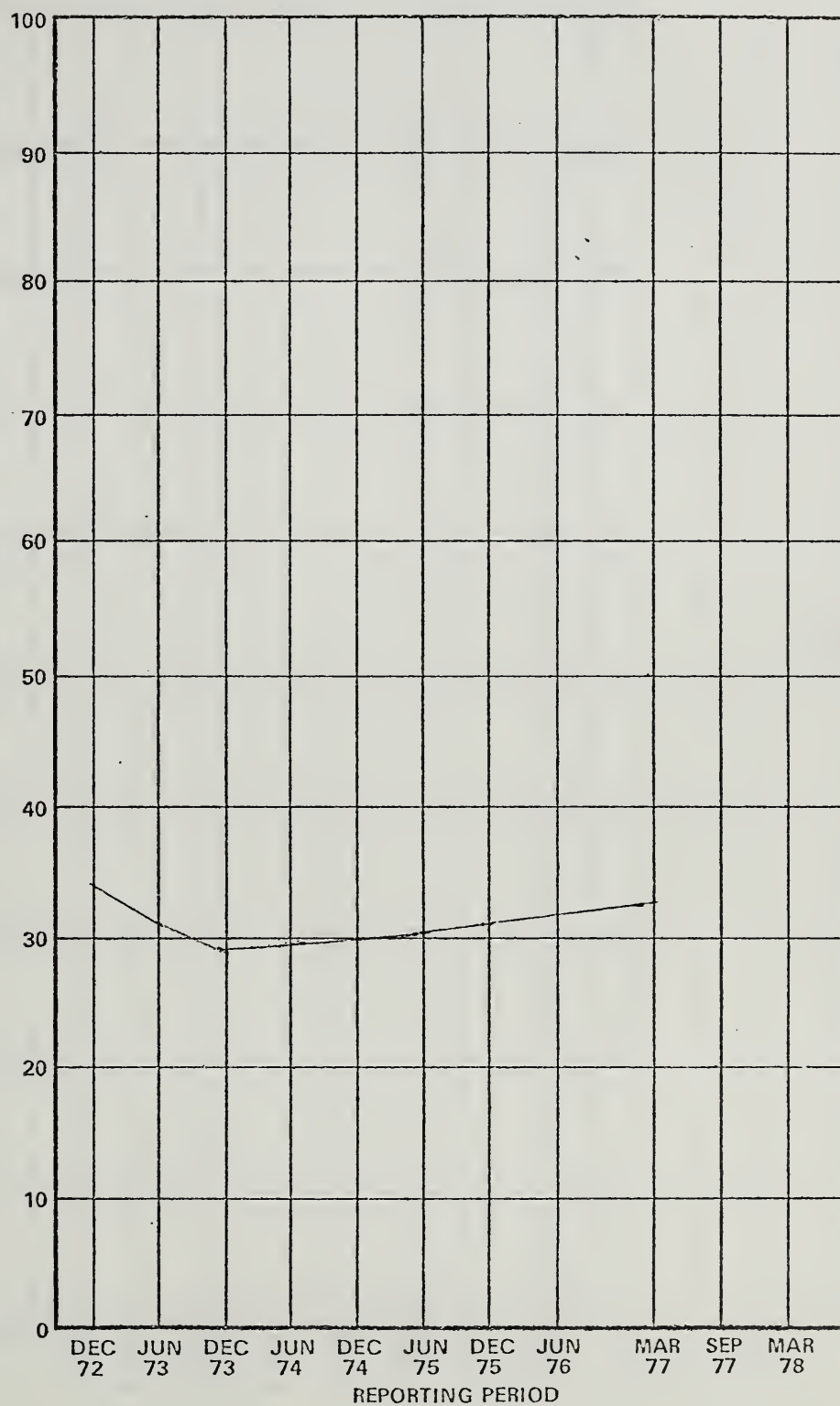


Figure 73

% of Boys
9-13 Years

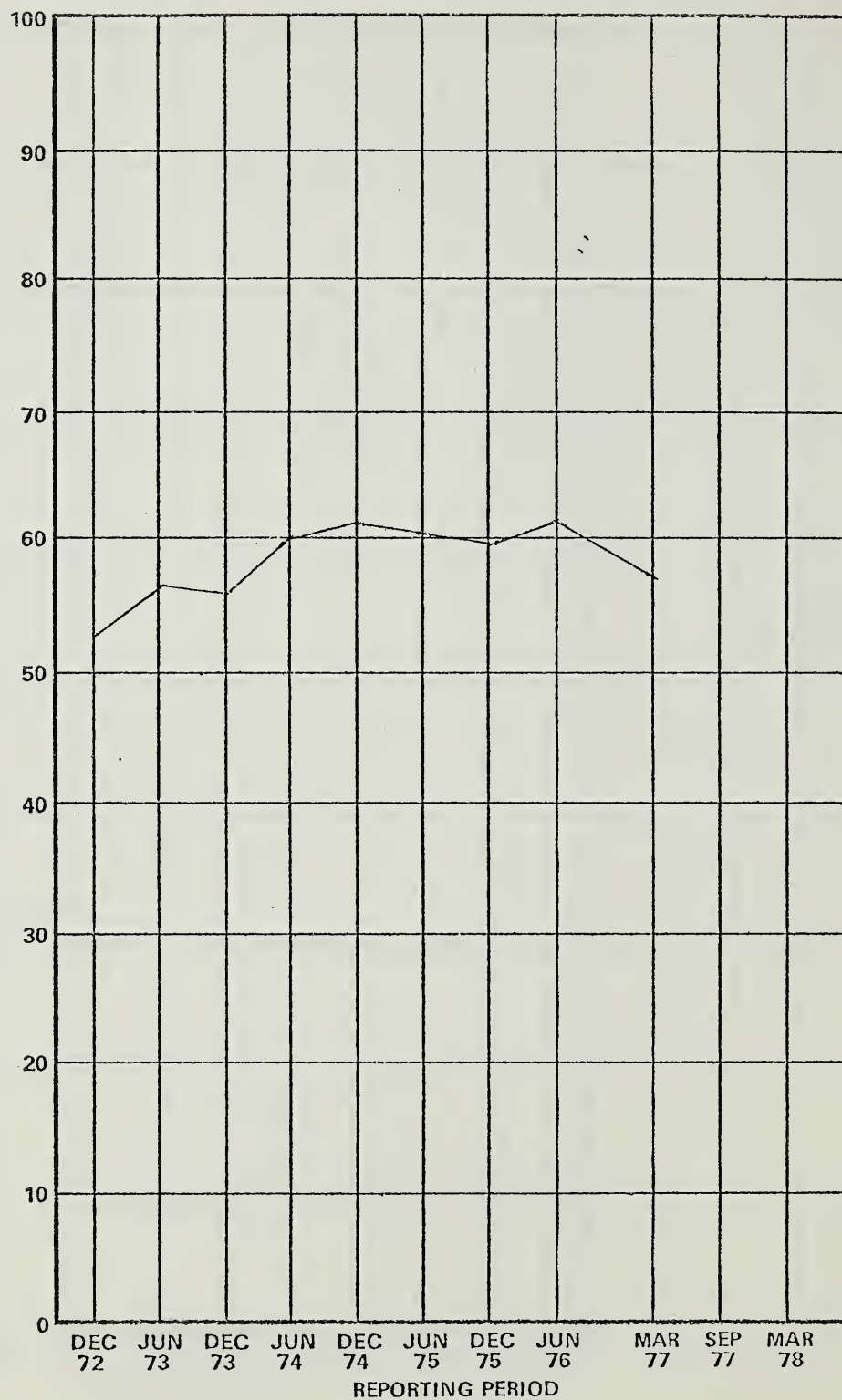


Figure 74

% of Boys
14 or Older

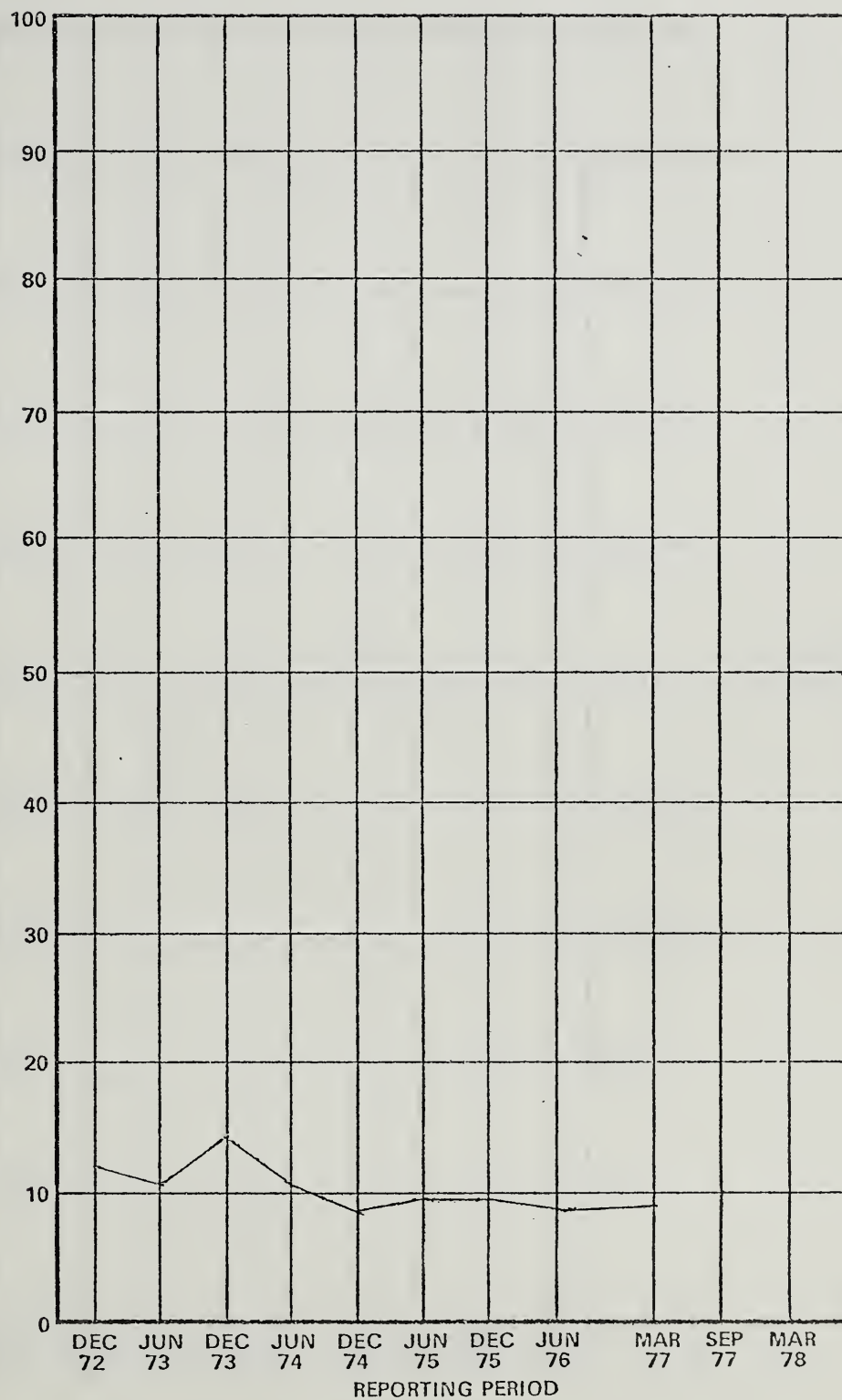


Figure 75

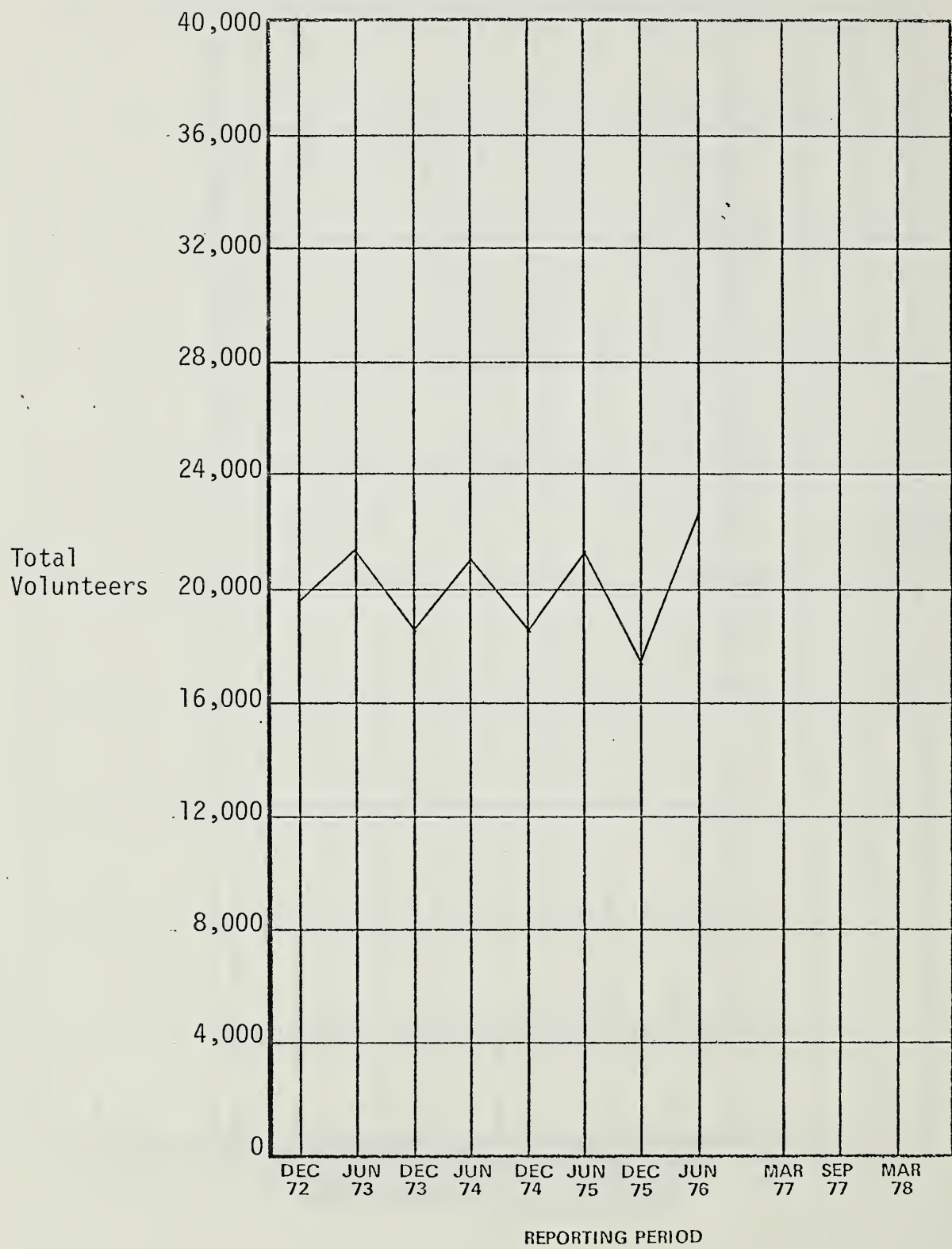


Figure 76

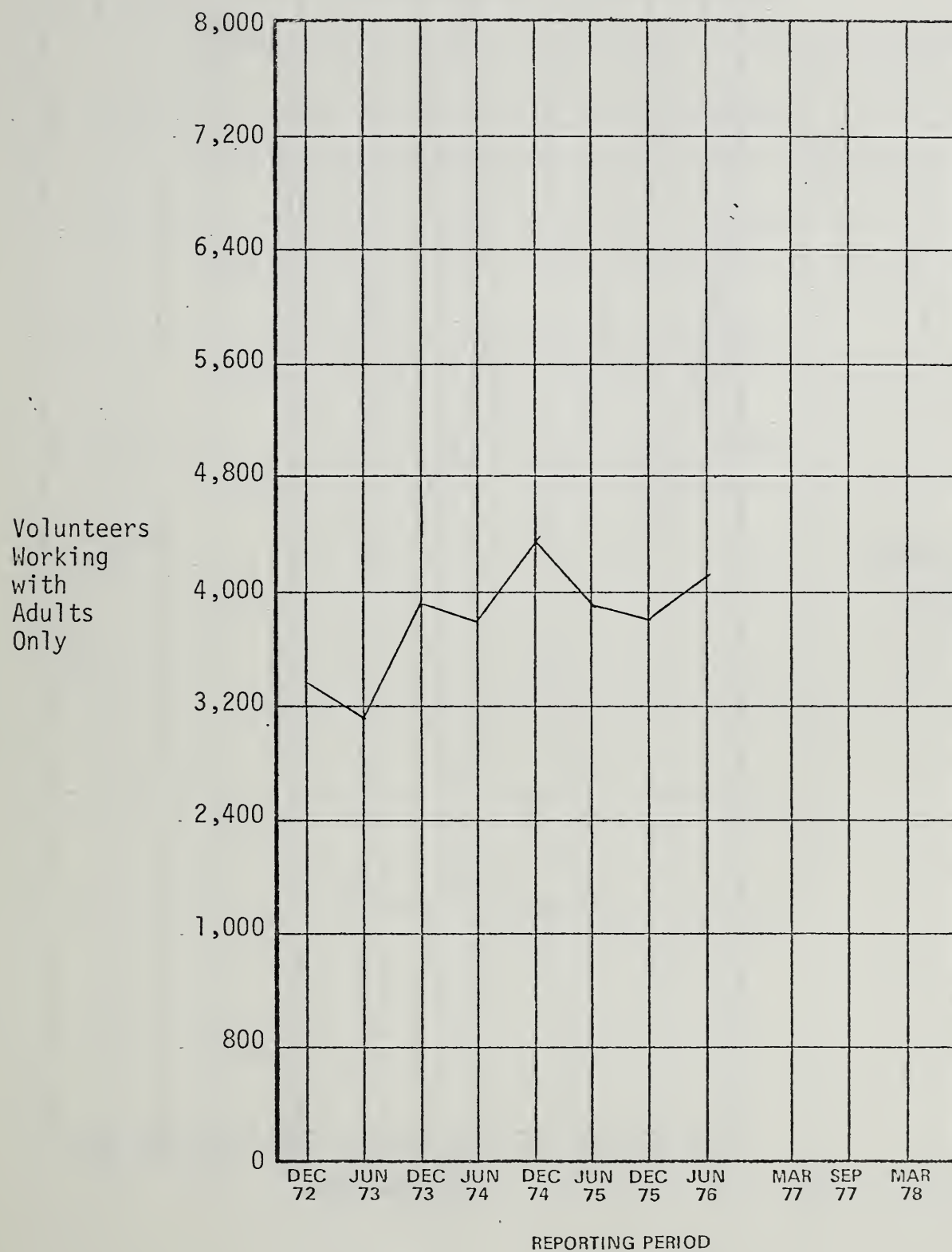


Figure 77

%
Volunteers
Working
with
Adults

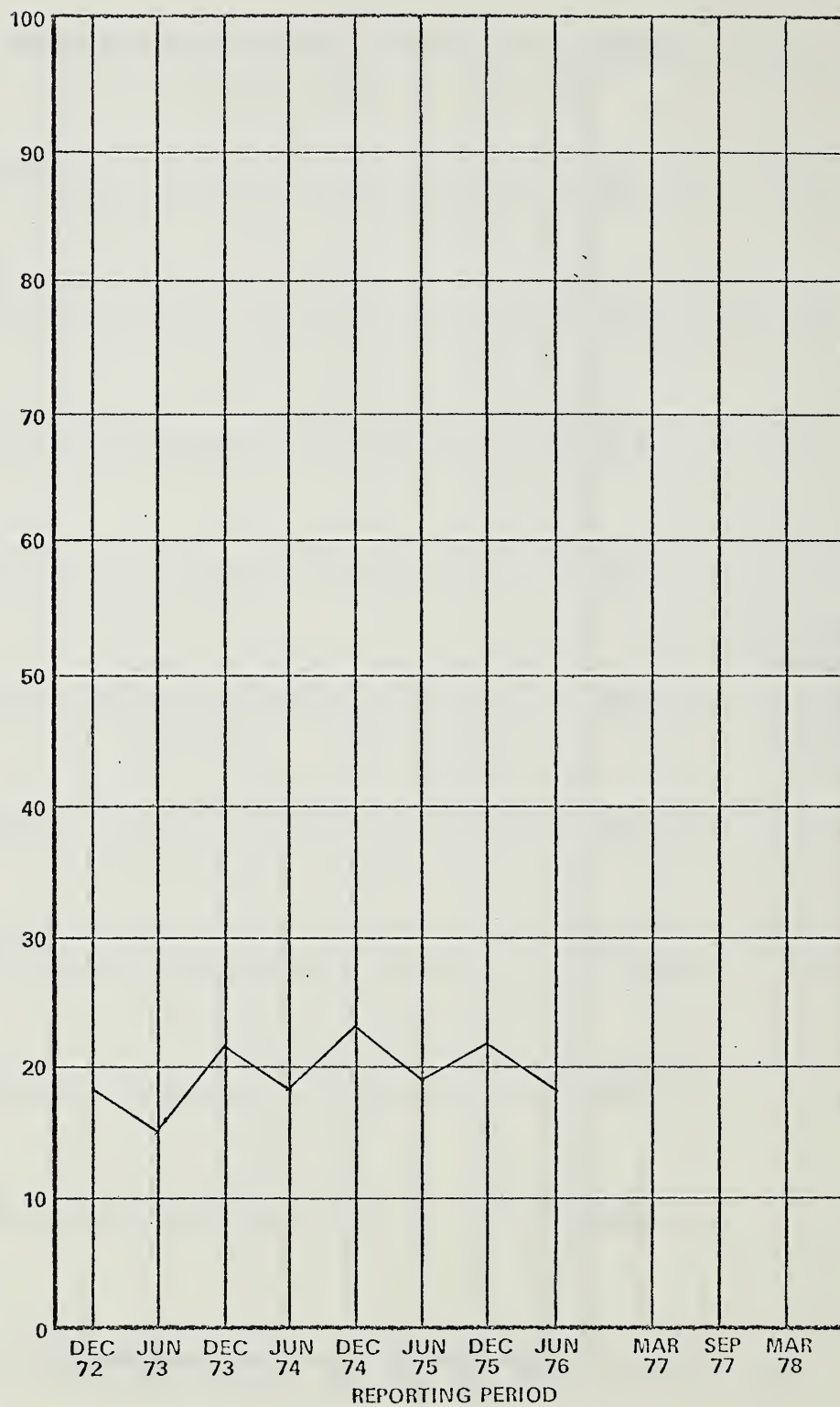


Figure 78

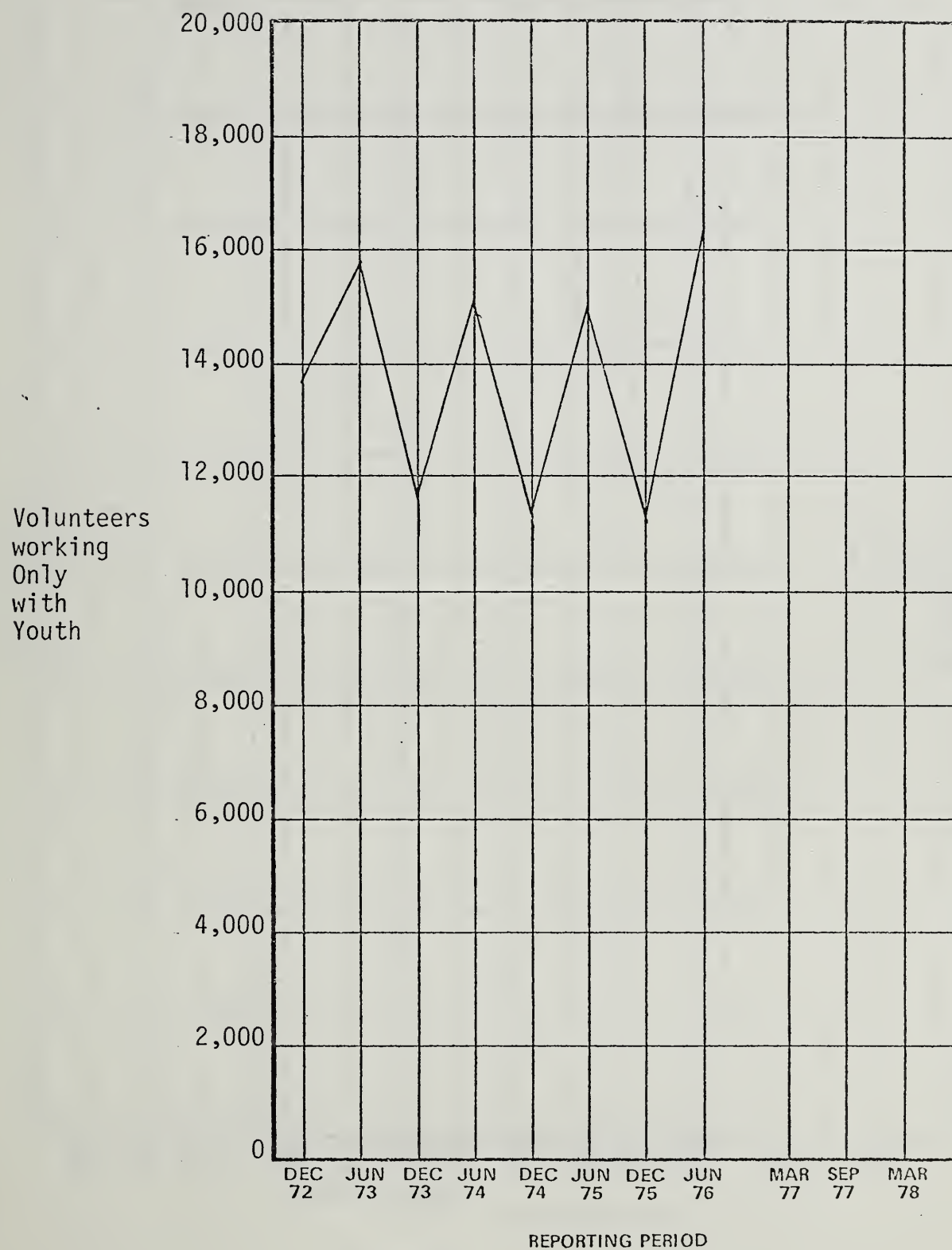


Figure 79

%
Volunteers
Working
Only
with
Youth

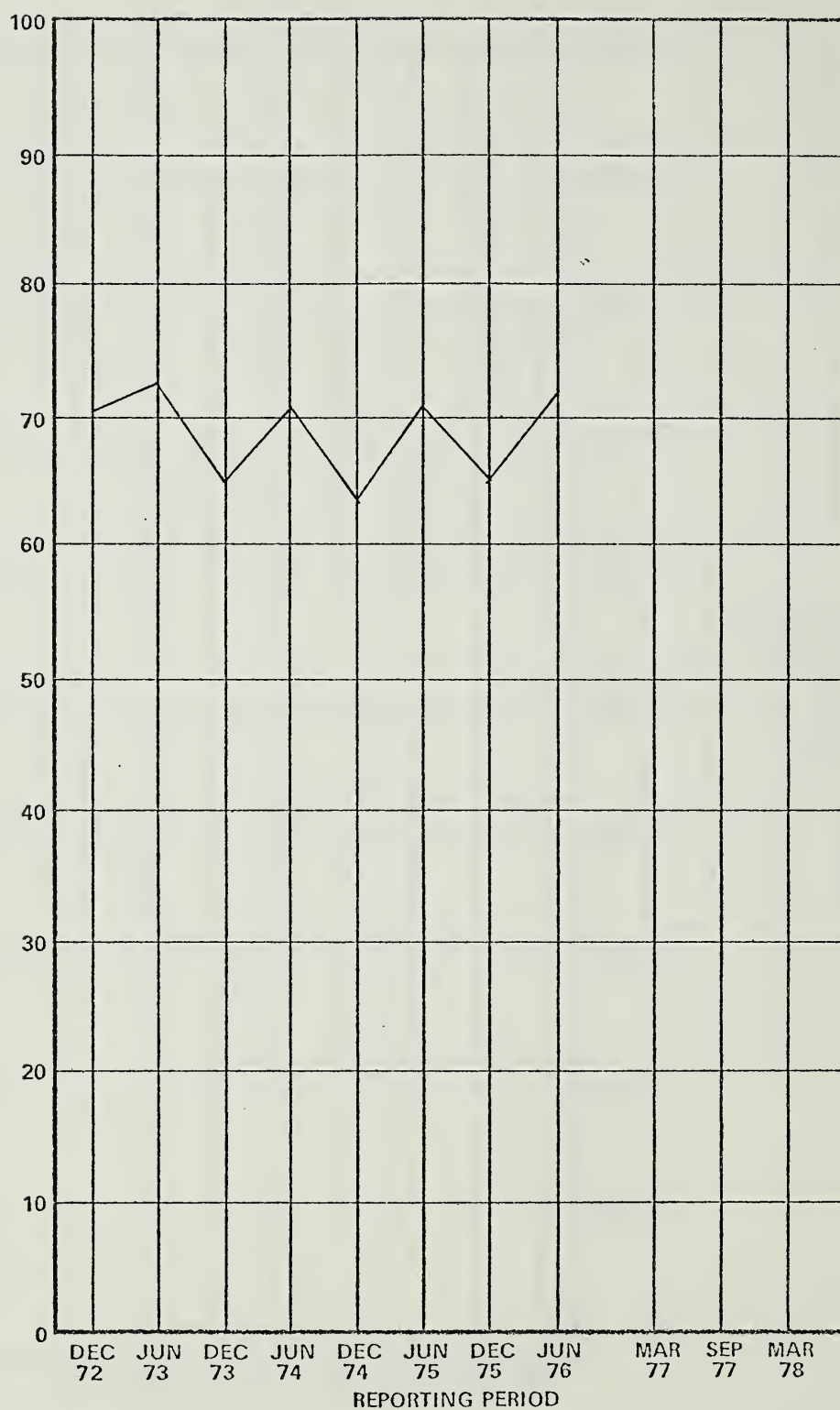


Figure 80

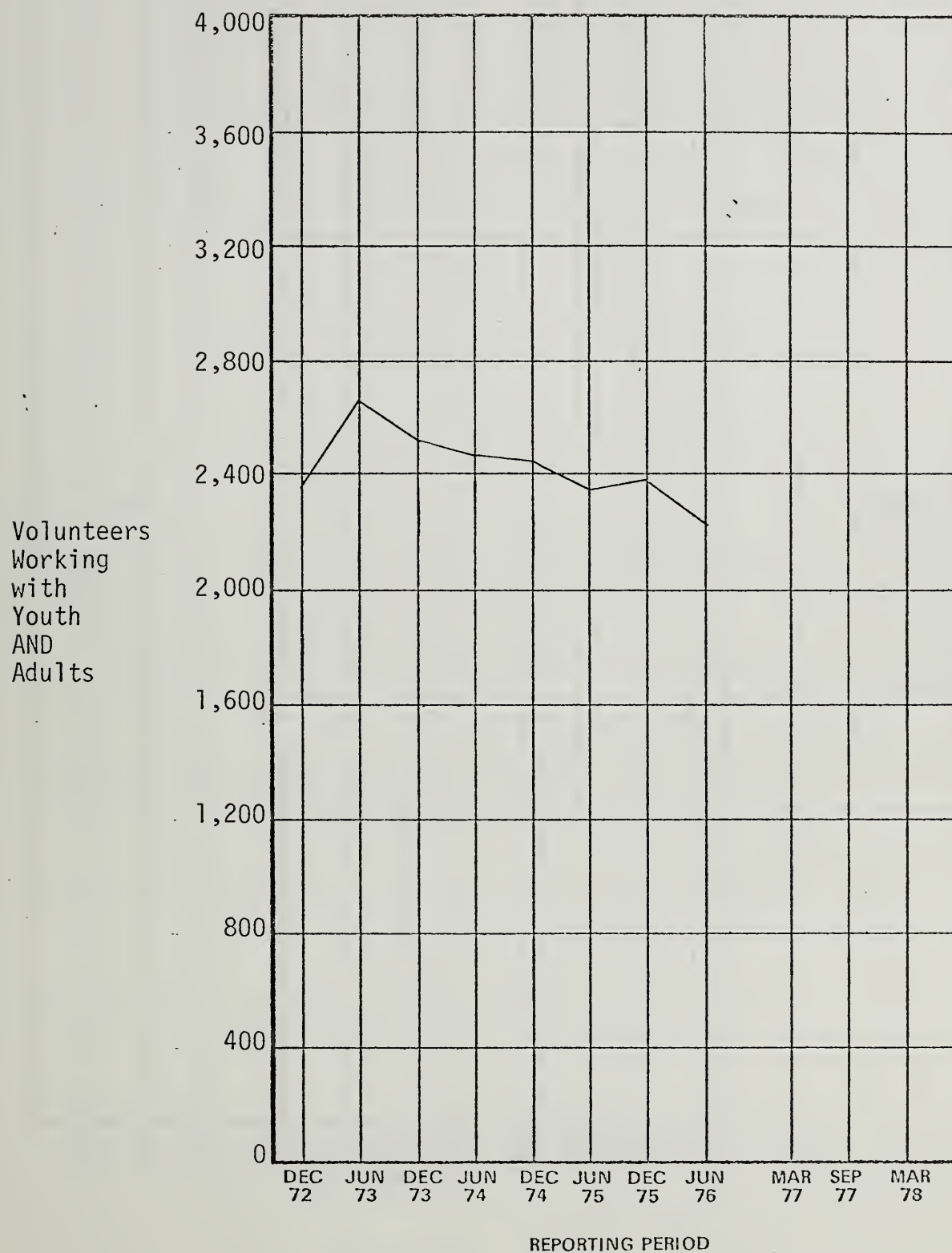


Figure 81

%
Volunteers
Working
with
Both
Youth
AND
Adults

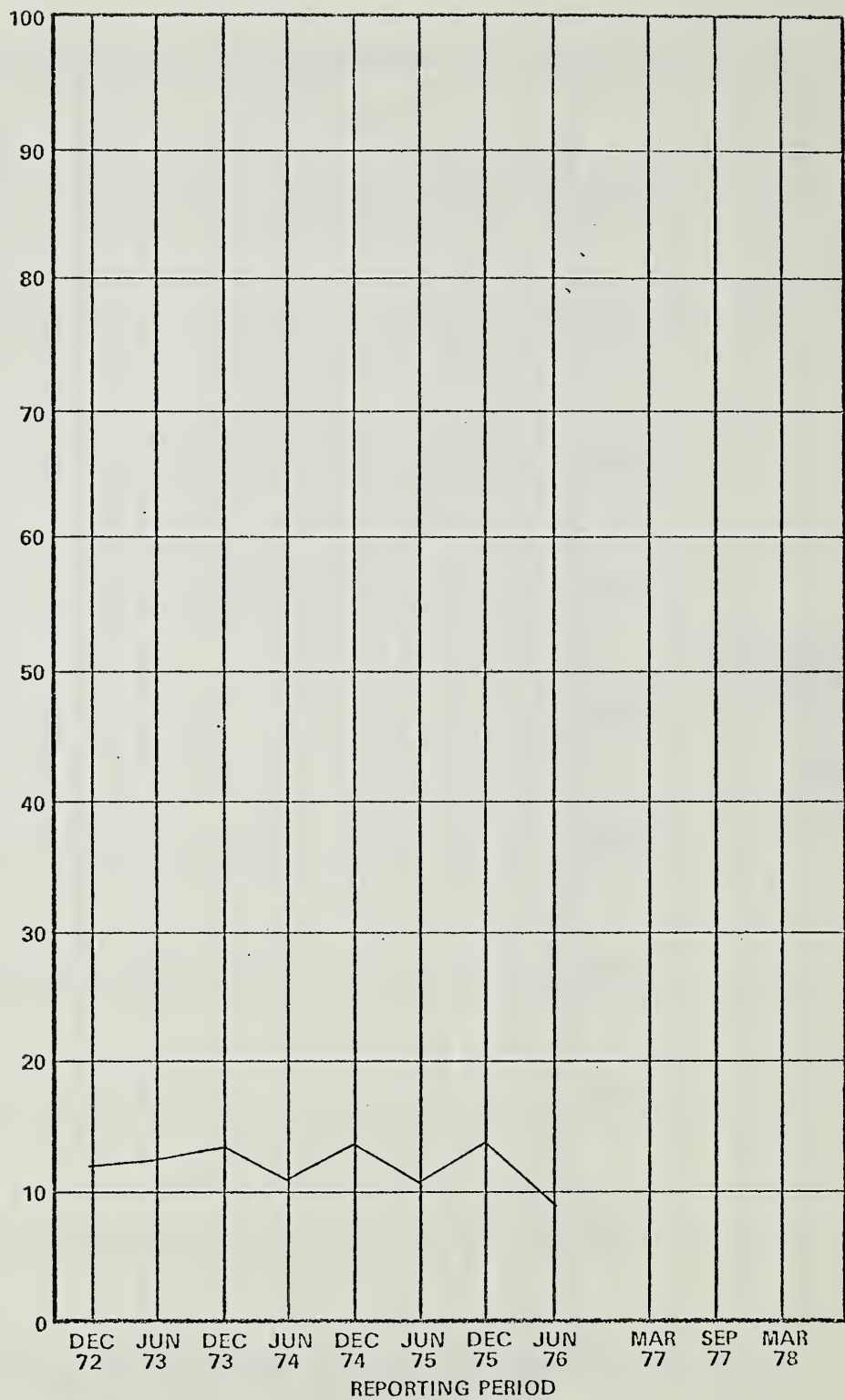


Figure 82

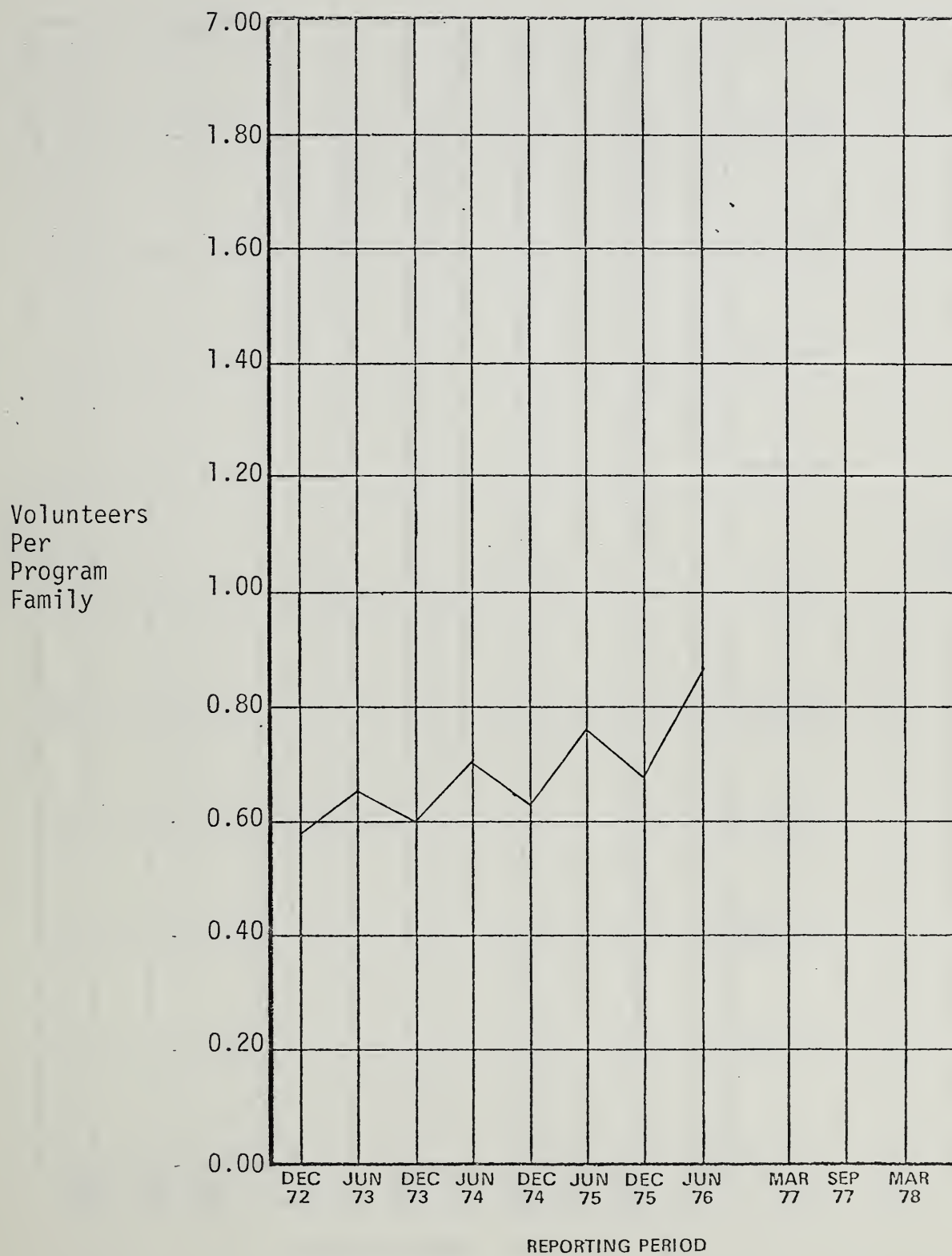


Figure 83

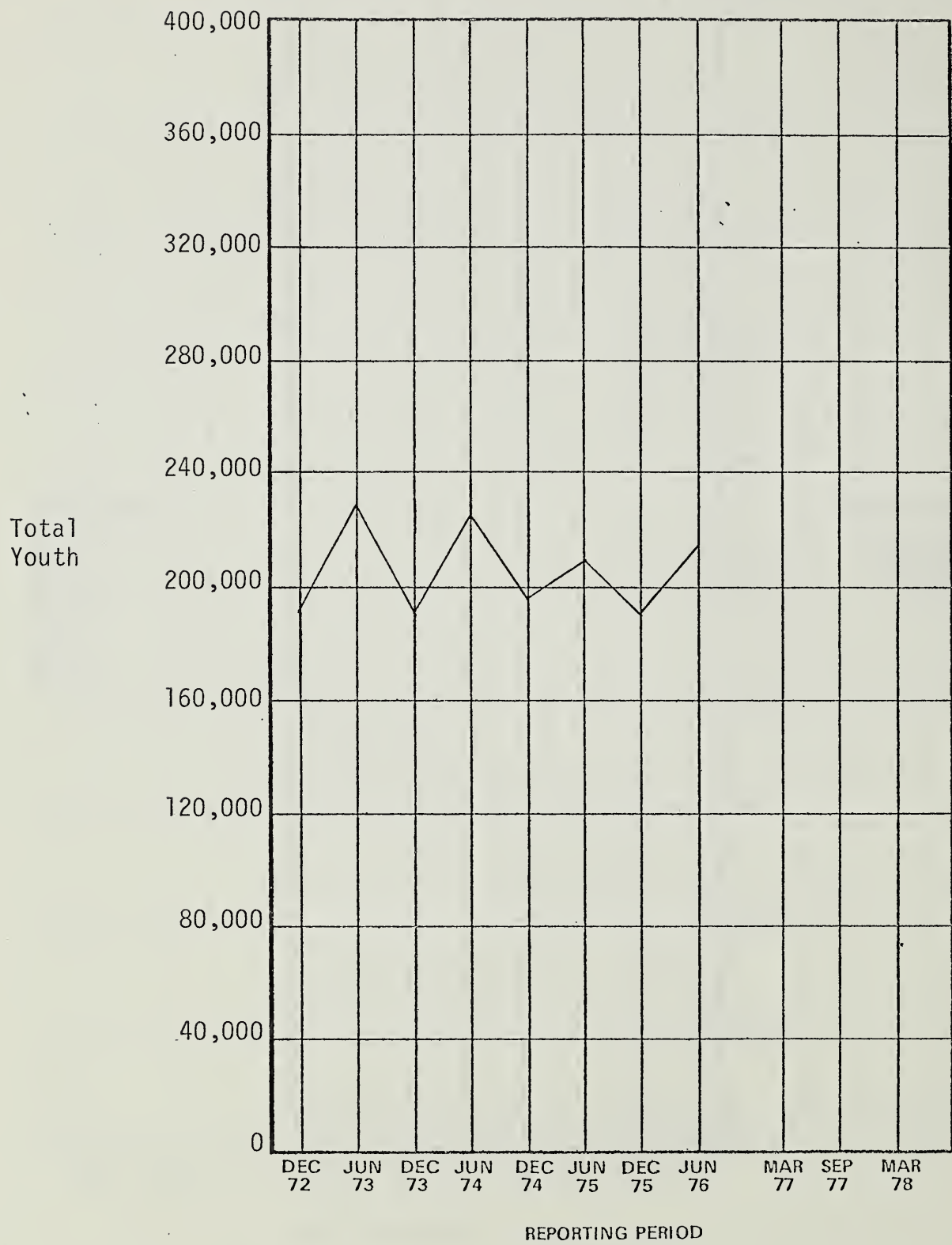


Figure 84

Youth
Per
Program
Family

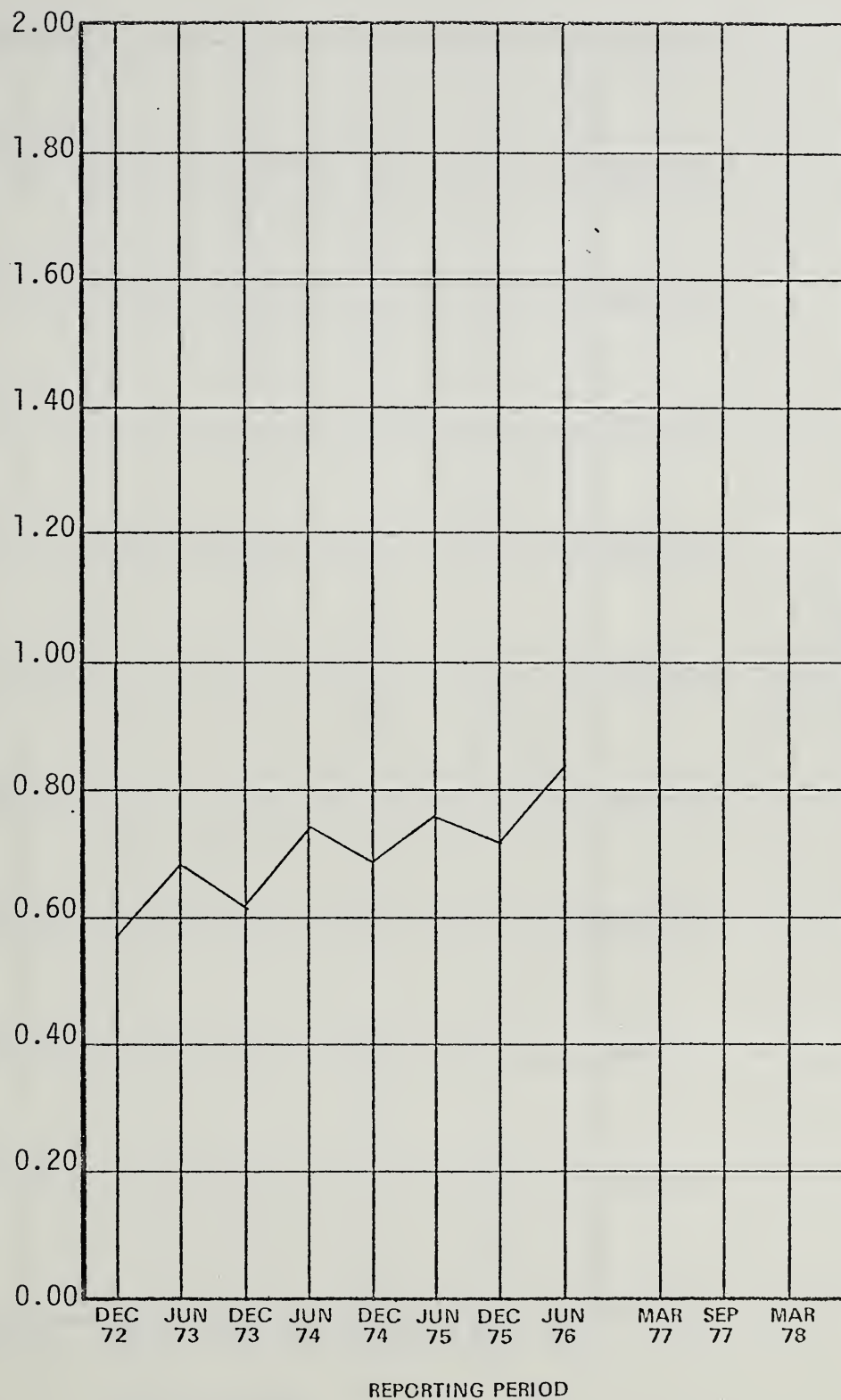


Figure 85

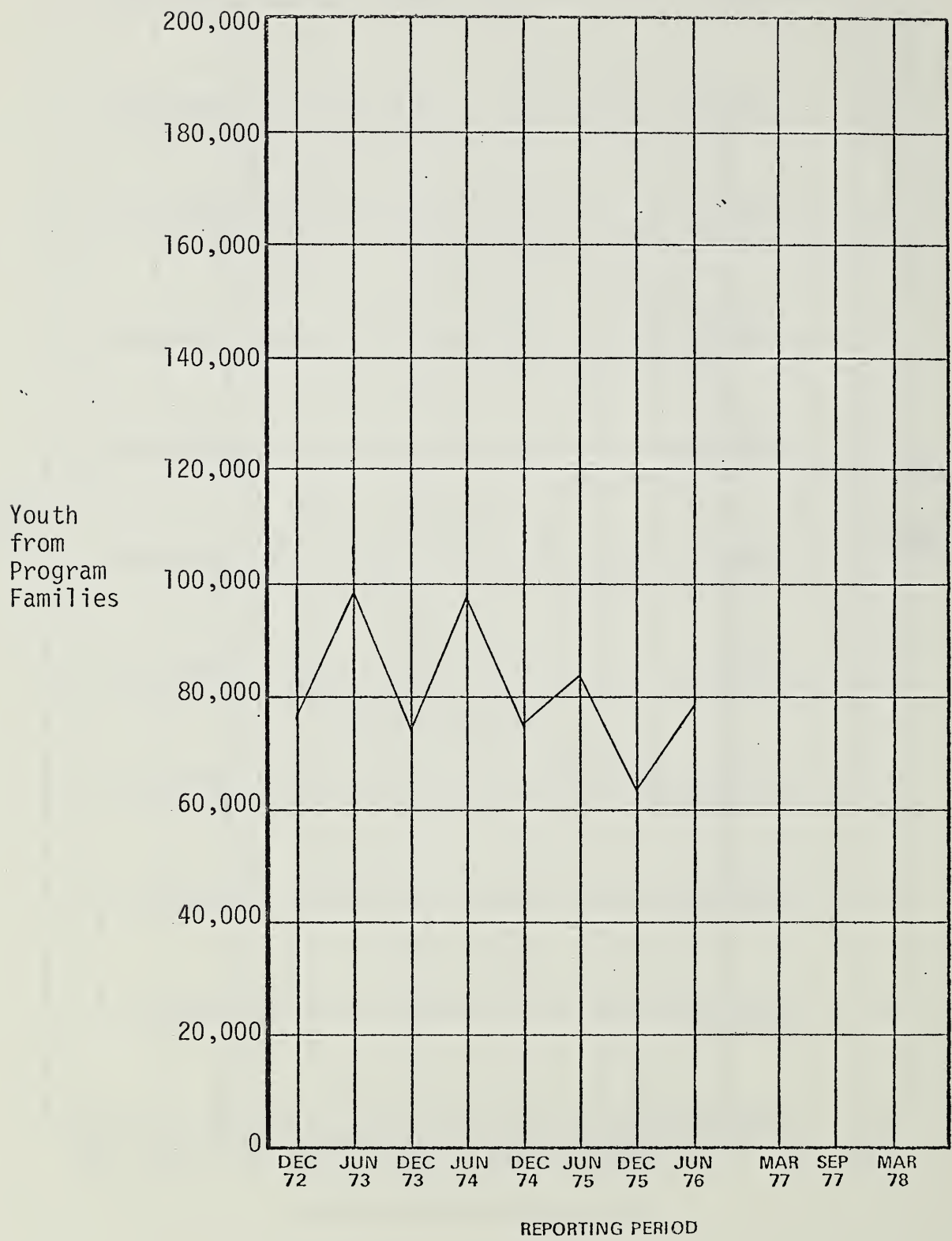


Figure 86

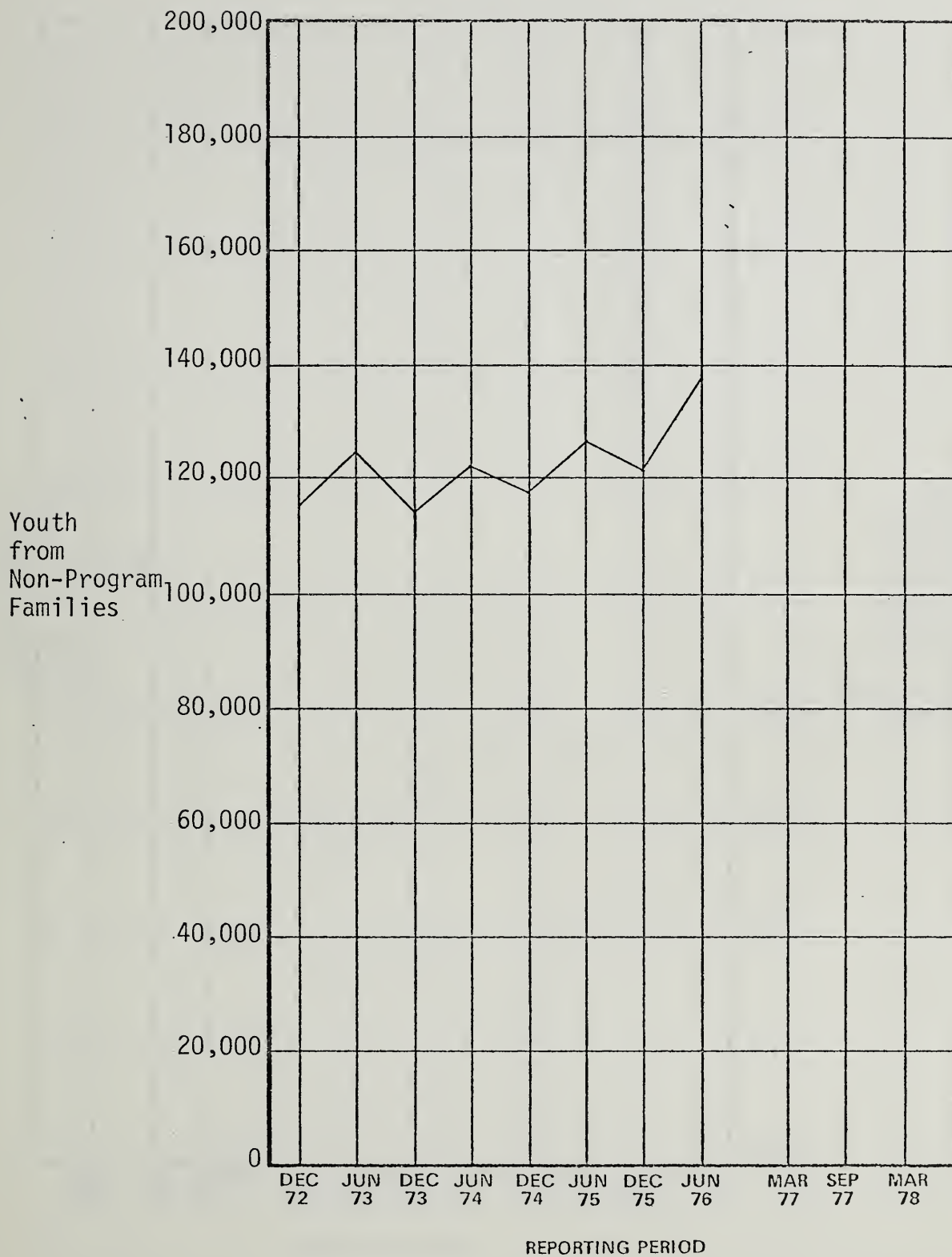


Figure 87

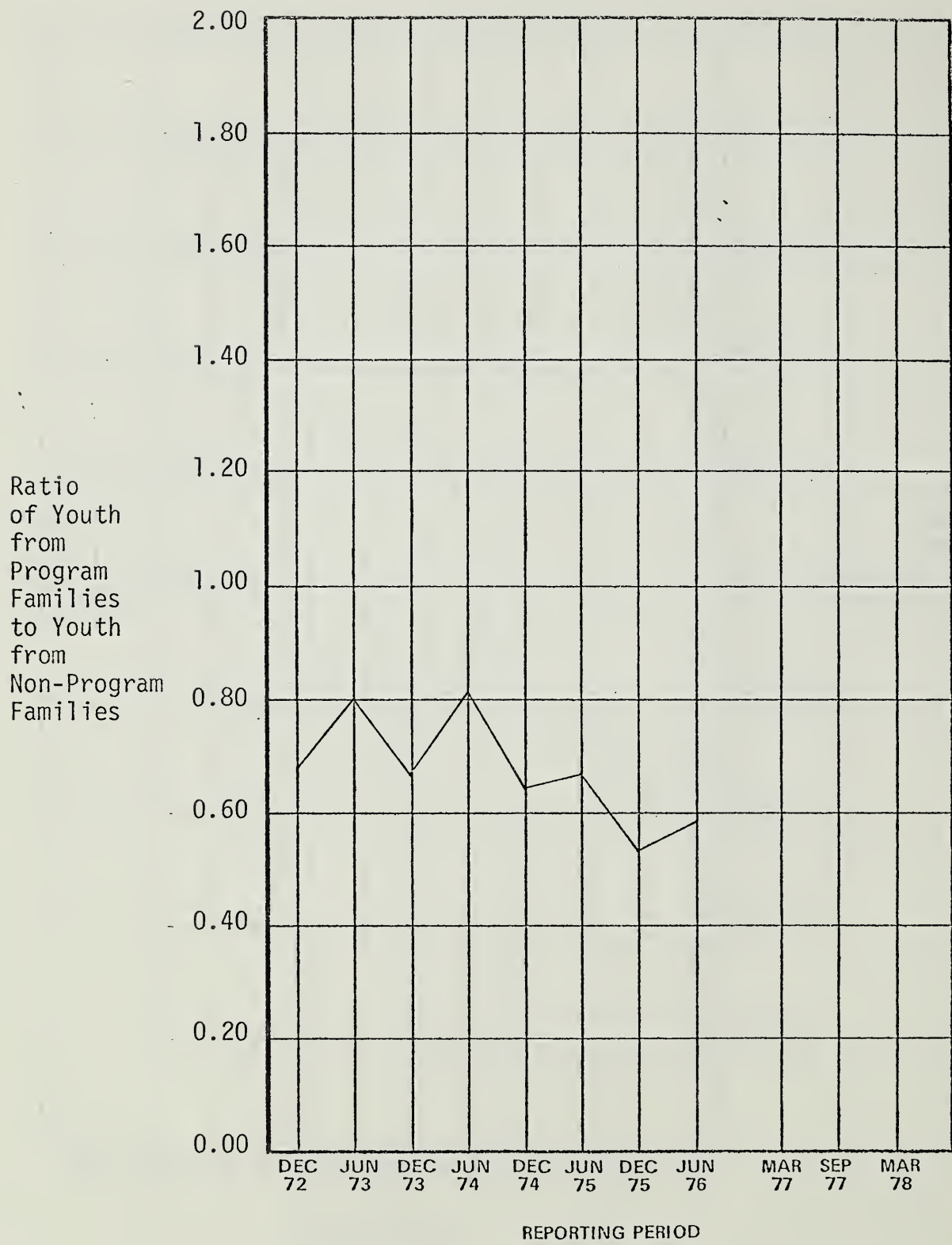


Figure 88

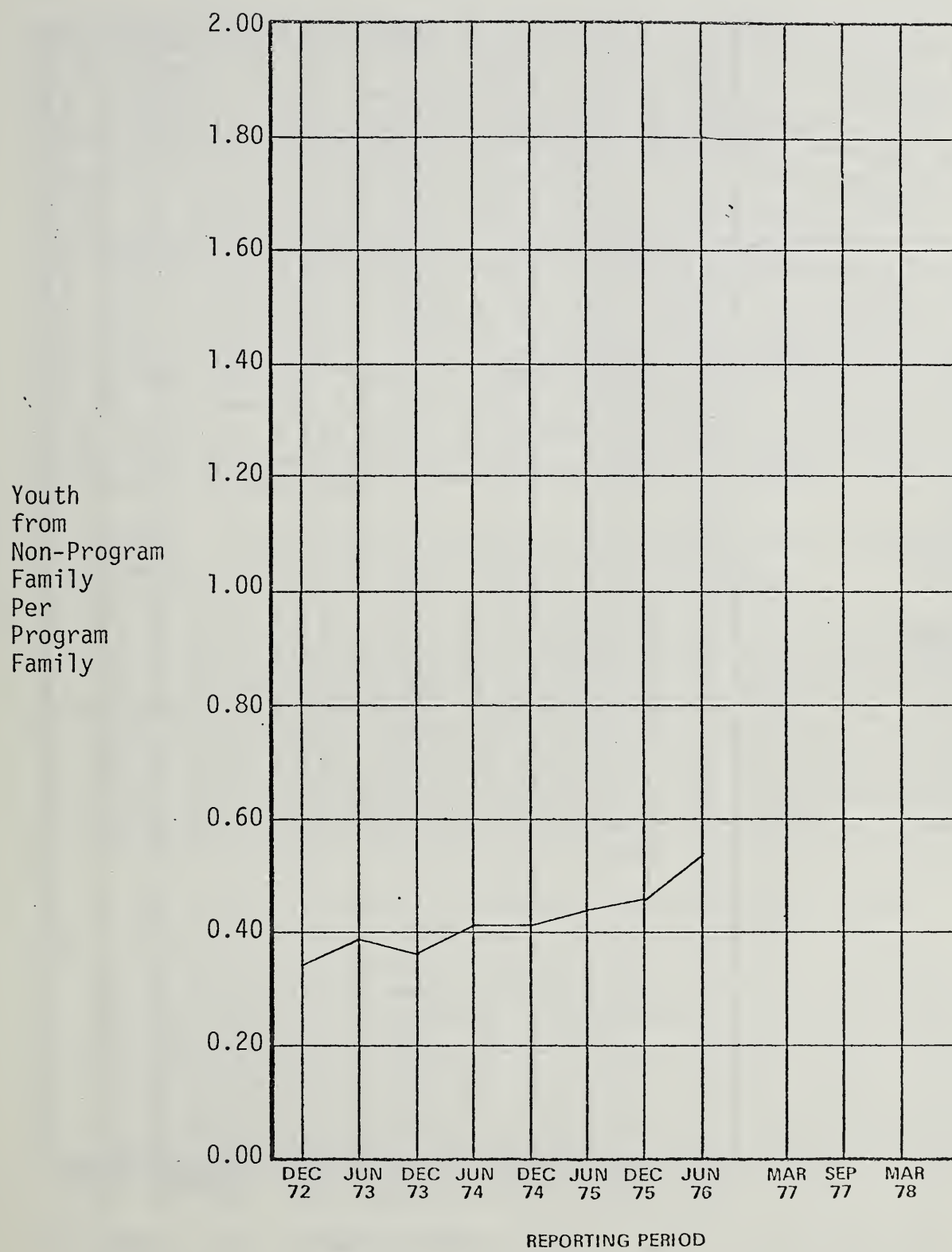


Figure 89

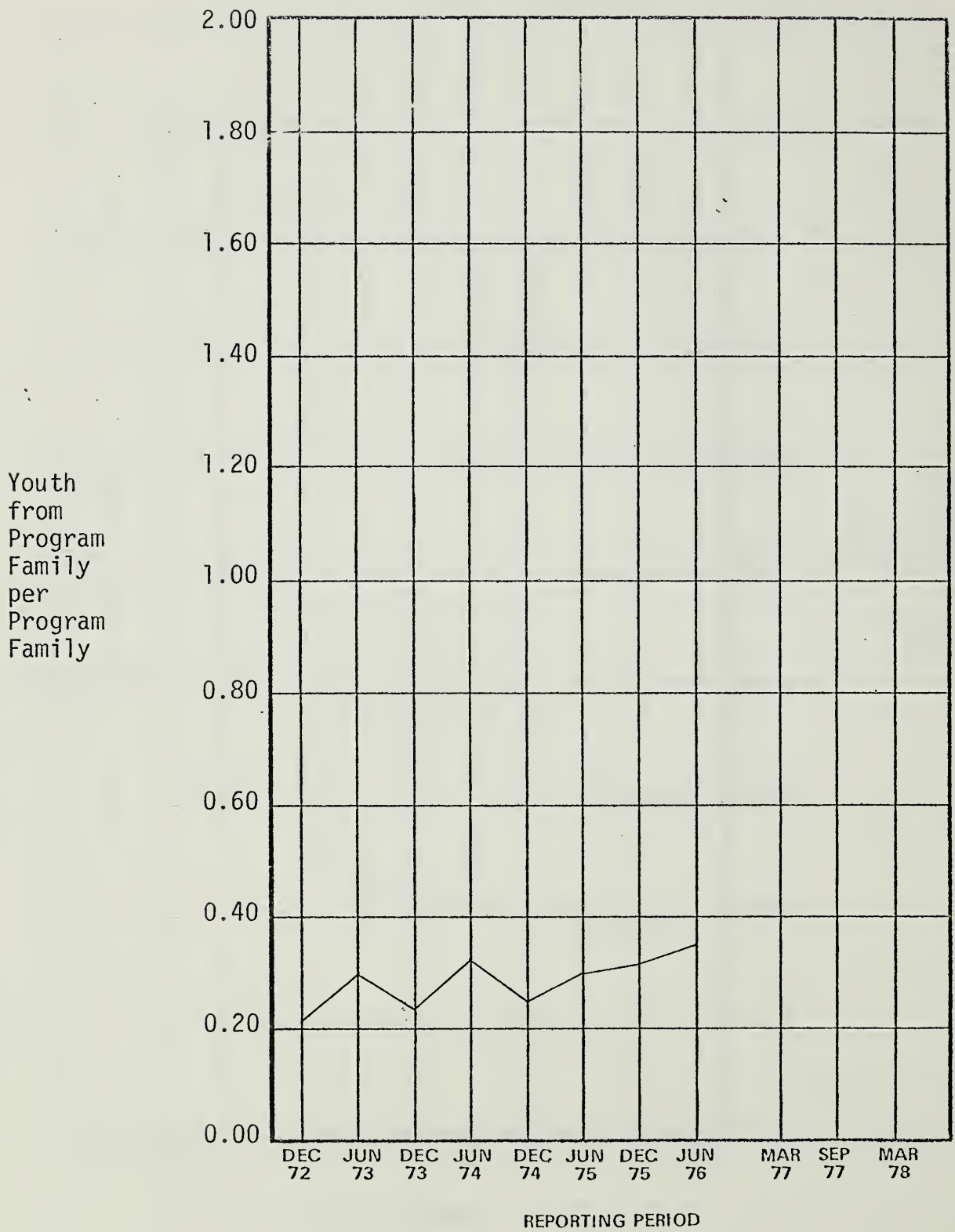


Figure 90

Program Effectiveness

1. FOOD RECALL DIFFERENCE SCORES are calculated by subtracting scores on Food Recall #1 (FR #1) from those on subsequent food recalls. The difference scores have been calculated in two ways: (a) using scores within a given reporting period (an UNSTAGGERED set) and (b) using scores which attempt to "track" a given set of scores by examining the data across reporting periods (e.g., subtracting FR #1 scores for December 1972 from the FR #2 scores for June of 1973). The first method is valid only if one can make the assumption that the homemaker groups represented are equivalent in aptitude, resources, etc. This method does, however, have the advantage of assuring that all data were gathered in roughly the same context (time of year, same set of aides, etc.). The second method (using STAGGERED scores) has the advantage of "tracking a large proportion of aides over time." The set of homemakers will get smaller with subsequent food recalls, since attrition is expected as homemakers graduate from the program or drop out because of poor performance, lack of continued interest in EFNEP, or other reasons.

- a. STATUS: In the "2244+" category, the current status of program homemaker nutritional improvement is as follows:

- (1) FR #1-FR #2 (unstaggered)..difference of 7.6% pts. (Figure 91)
- (2) FR #1-FR #3 (unstaggered)..difference of 13.8% pts. (Figure 92)
- (3) FR #1-FR #4 (unstaggered)..difference of 15.9% pts. (Figure 93)
- (4) FR #1-FR #5 (unstaggered)..difference of 16.9% pts. (Figure 94)
- (5) FR #1-FR #6 (unstaggered)..difference of 18.5% pts. (Figure 95)
- (6) FR #1-FR #7 (unstaggered)..difference of 20.9% pts. (Figure 96)
- (7) FR #1-FR #2 (staggered)....difference of 6.6% pts. (Figure 97)
- (8) FR #1-FR #3 (staggered)....difference of 13.6% pts. (Figure 98)
- (9) FR #1-FR #4 (staggered)....difference of 15.7% pts. (Figure 99)

In the "1111+" category, the current status is as follows:

- (1) FR #1-FR #2 (unstaggered)..difference of 15.3% pts. (Figure 100)
- (2) FR #1-FR #3 (unstaggered)..difference of 20.1% pts. (Figure 101)
- (3) FR #1-FR #4 (unstaggered)..difference of 20.5% pts. (Figure 102)
- (4) FR #1-FR #5 (unstaggered)..difference of 22.1% pts. (Figure 103)
- (5) FR #1-FR #6 (unstaggered)..difference of 20.4% pts. (Figure 104)
- (6) FR #1-FR #7 (unstaggered)..difference of 19.9% pts. (Figure 105)
- (7) FR #1-FR #2 (staggered)....difference of 17.1% pts. (Figure 106)
- (8) FR #1-FR #3 (staggered)....difference of 21.9% pts. (Figure 107)
- (9) FR #1-FR #4 (staggered)....difference of 21.3% pts. (Figure 108)

- b. TREND: While no completely consistent trend emerged from this set of analyses, a reasonably stable pattern did manifest itself: of the 18 examinations made, an upward trend (i.e., one indicating that EFNEP is getting better at positively influencing homemakers' nutritional practices) or no trend was noted in 17. Only in the FR #1-FR #7 difference scores in the "1111+" category has the trend

been significant and downwards (Figure 105). This pattern indicates that, in general, program families are acquiring better nutritional habits faster than they did in the past. This is particularly evident in the "2244+" category. In the "1111+" category the trends are less striking but still somewhat in evidence. Difference scores involving the FR #7 category are, moreover, somewhat suspect, since this tends to be a "catchall" food recall category. The downward trend mentioned above, therefore, is somewhat difficult to interpret.

Although the trends are generally positive, the rate of change has not been dramatic. The rate of increase in the "2244+" category (in those cases where significant trend was noted) ranged from about a quarter of a percentage point per year to about one and a half percentage points per year. Clearly, these are not vast increases. In the face of the increasing EFNEP efficiency noted earlier, however, just maintaining a given level of increase would bespeak an increase in program cost-effectiveness.

Difference
Between
Percentages:
FR#1-FR#2;
2244+;
Unstaggered

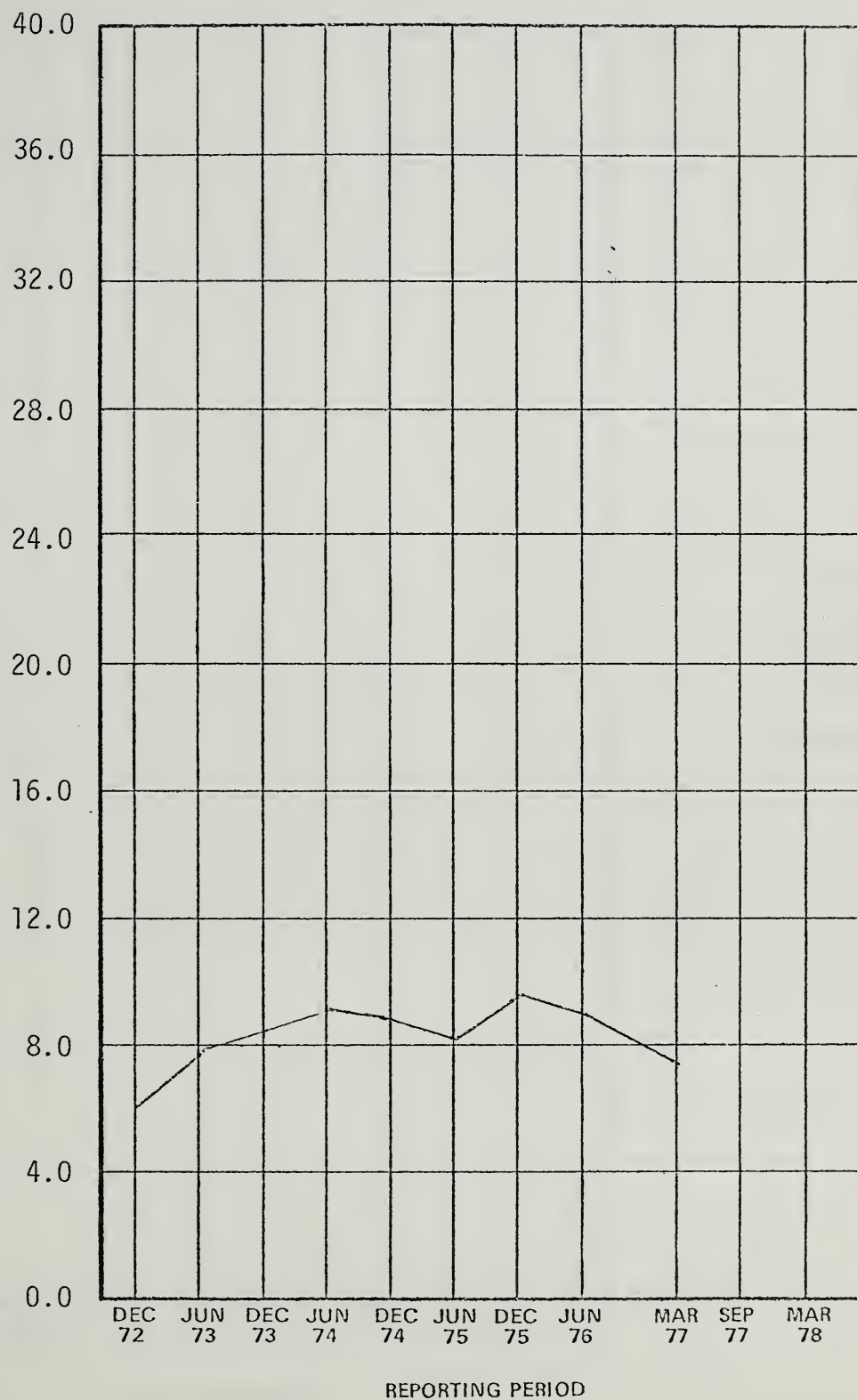


Figure 91

Difference
Between
Percentages:
FR#1-FR#3;
2244+;
Unstaggered

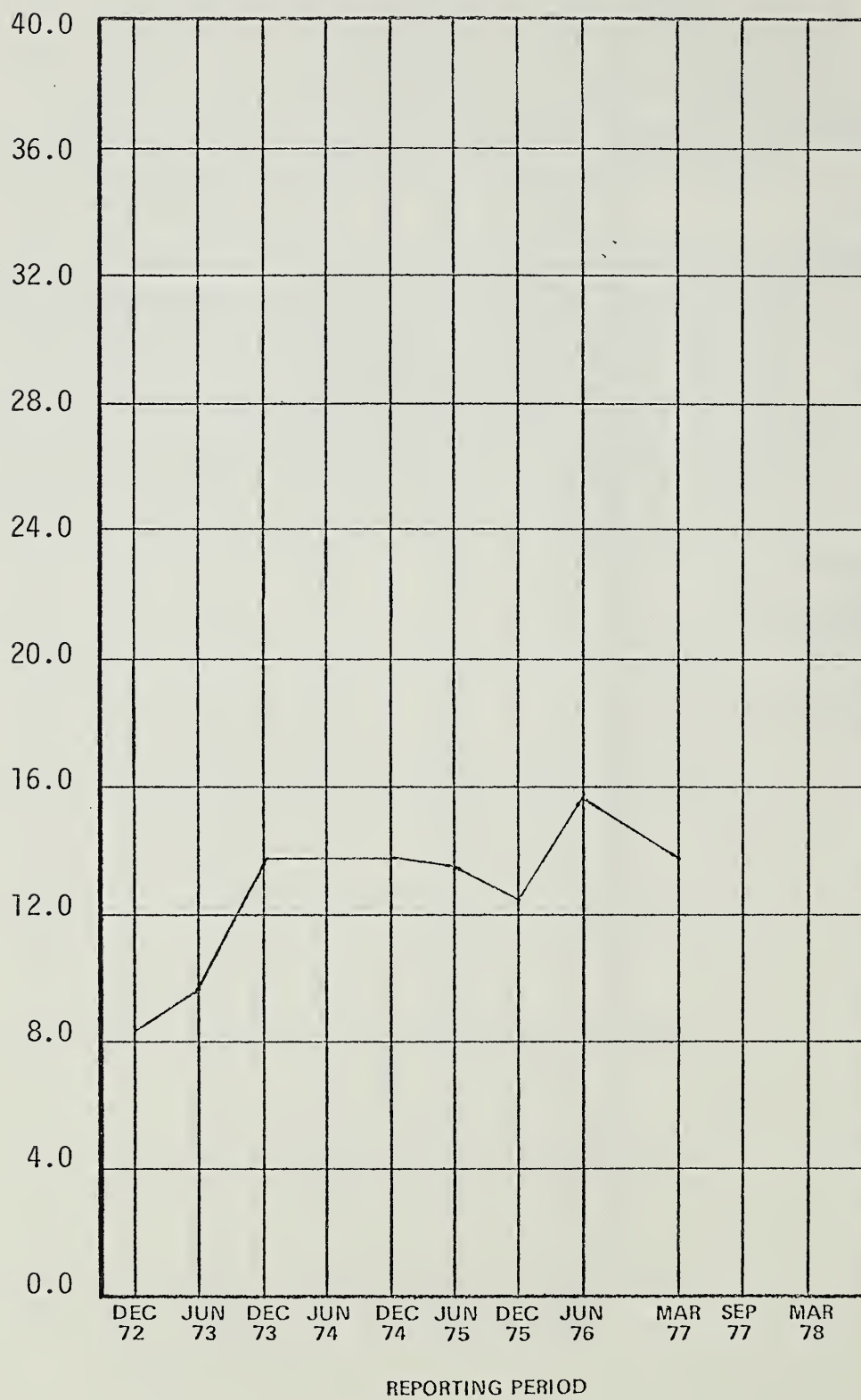


Figure 92

Difference
Between
Percentages;
FR#1-FR#4;
2244+;
Unstaggered

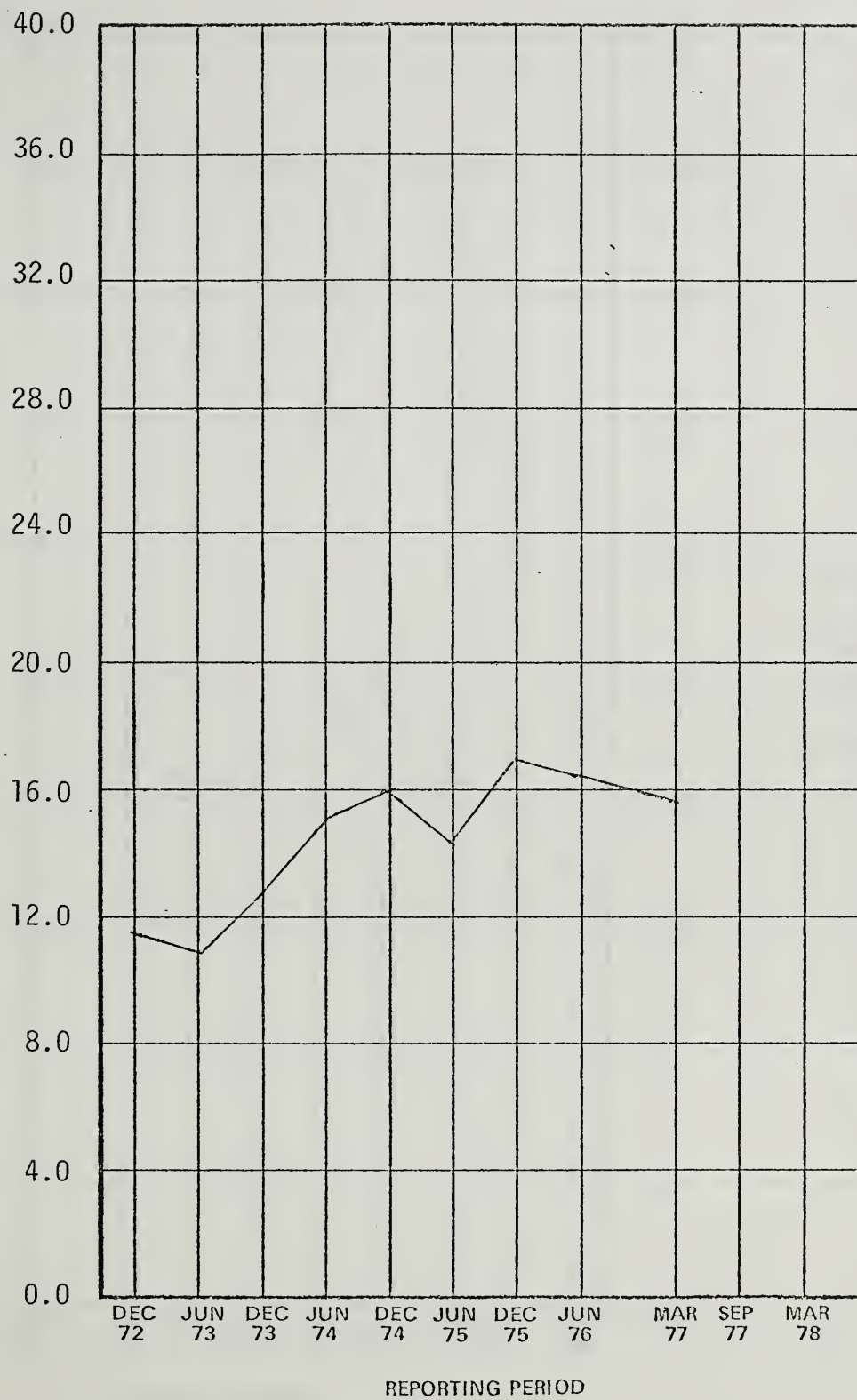


Figure 93

Differences
Between
Percentages;
FR#1-FR#5;
2244+;
Unstaggered

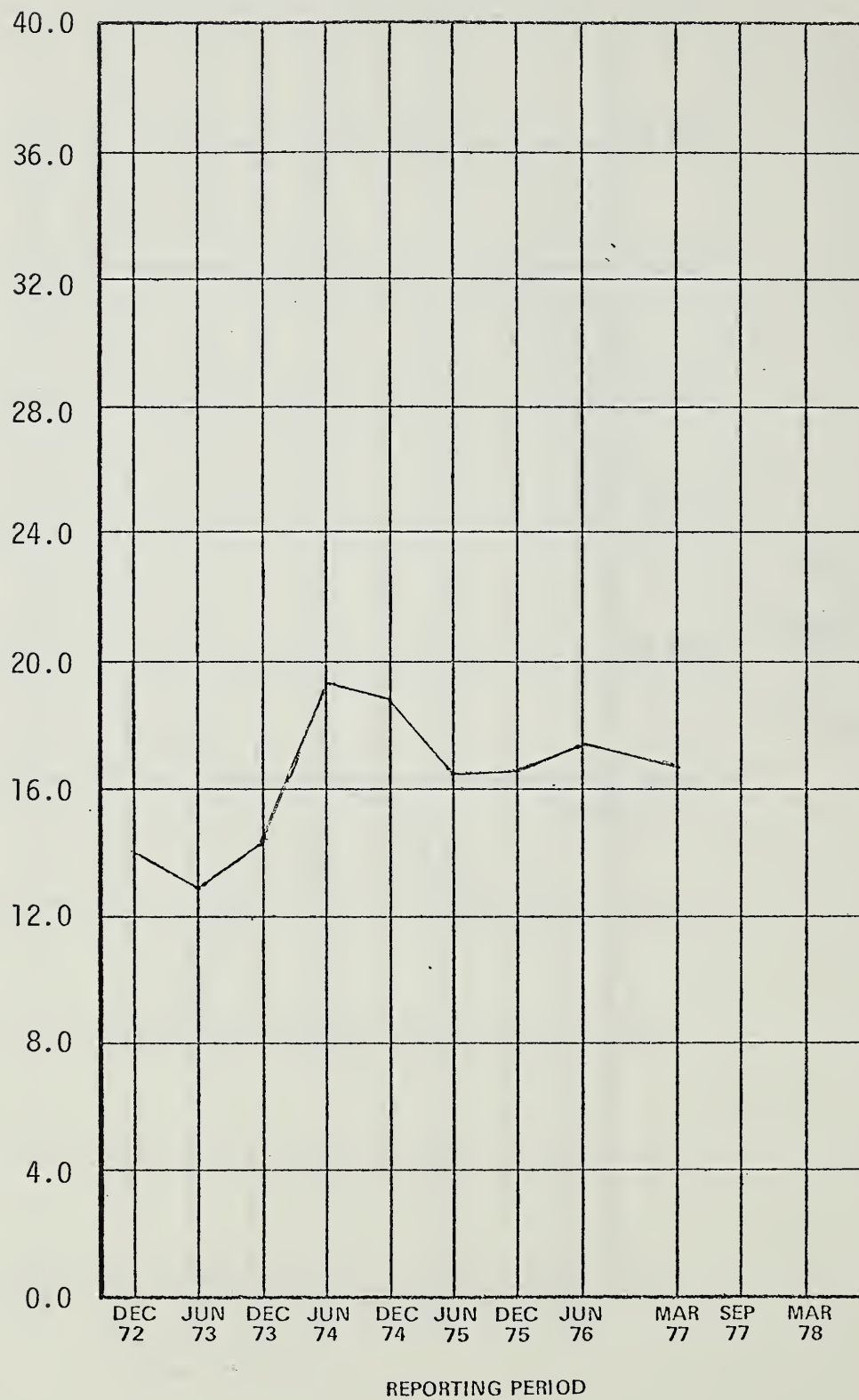


Figure 94

Differences
Between
Percentages;
FR#1-FR#6;
2244+;
Unstaggered

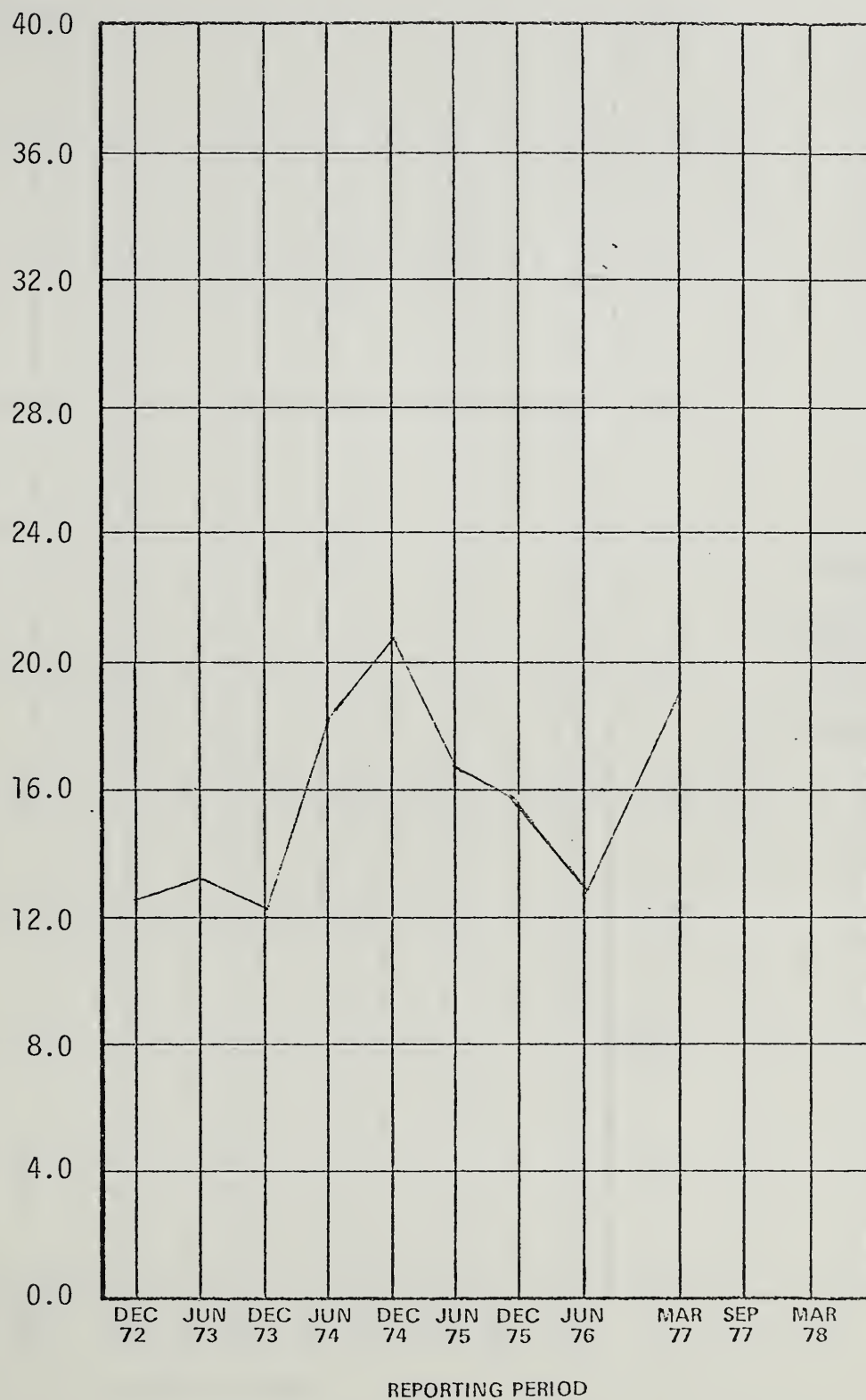


Figure 95

Differences
Between
Percentages;
FR#1-FR#7;
2244+;
Unstaggered

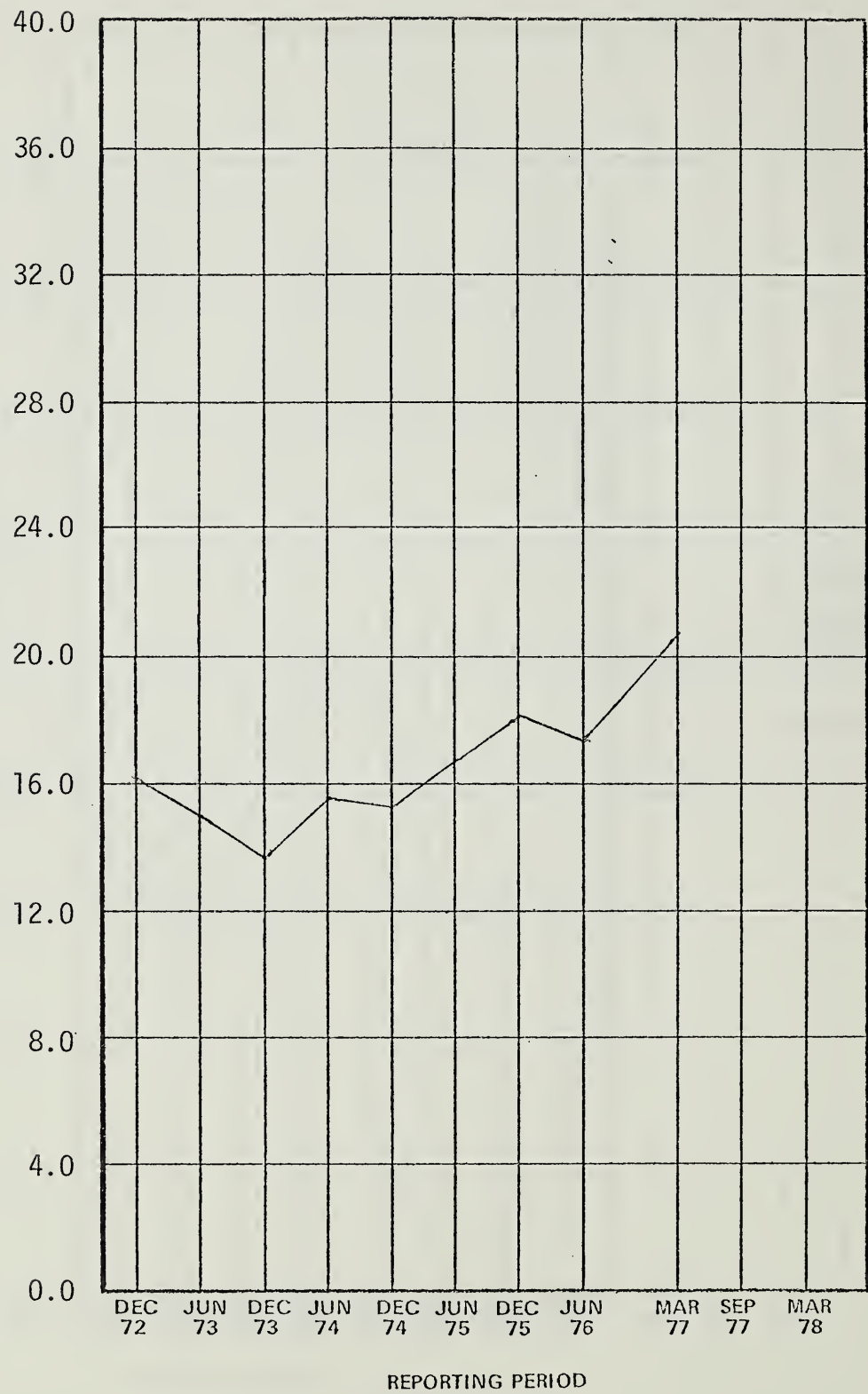


Figure 96

Differences
Between
Percentages;
FR#1-FR#2;
2244+;
Staggered

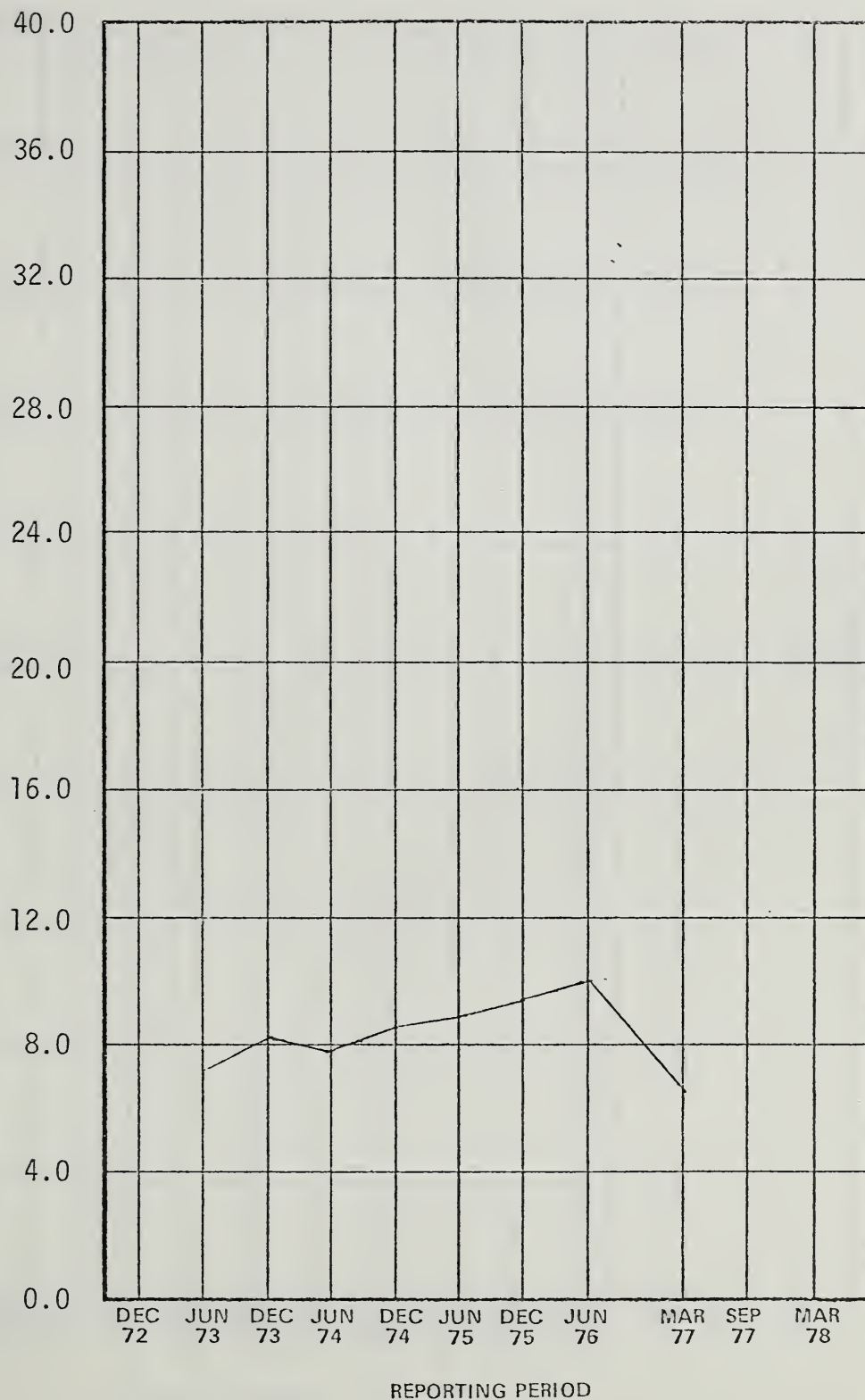


Figure 97

Differences
Between
Percentages;
FR#1-FR#3;
2244+;
Staggered

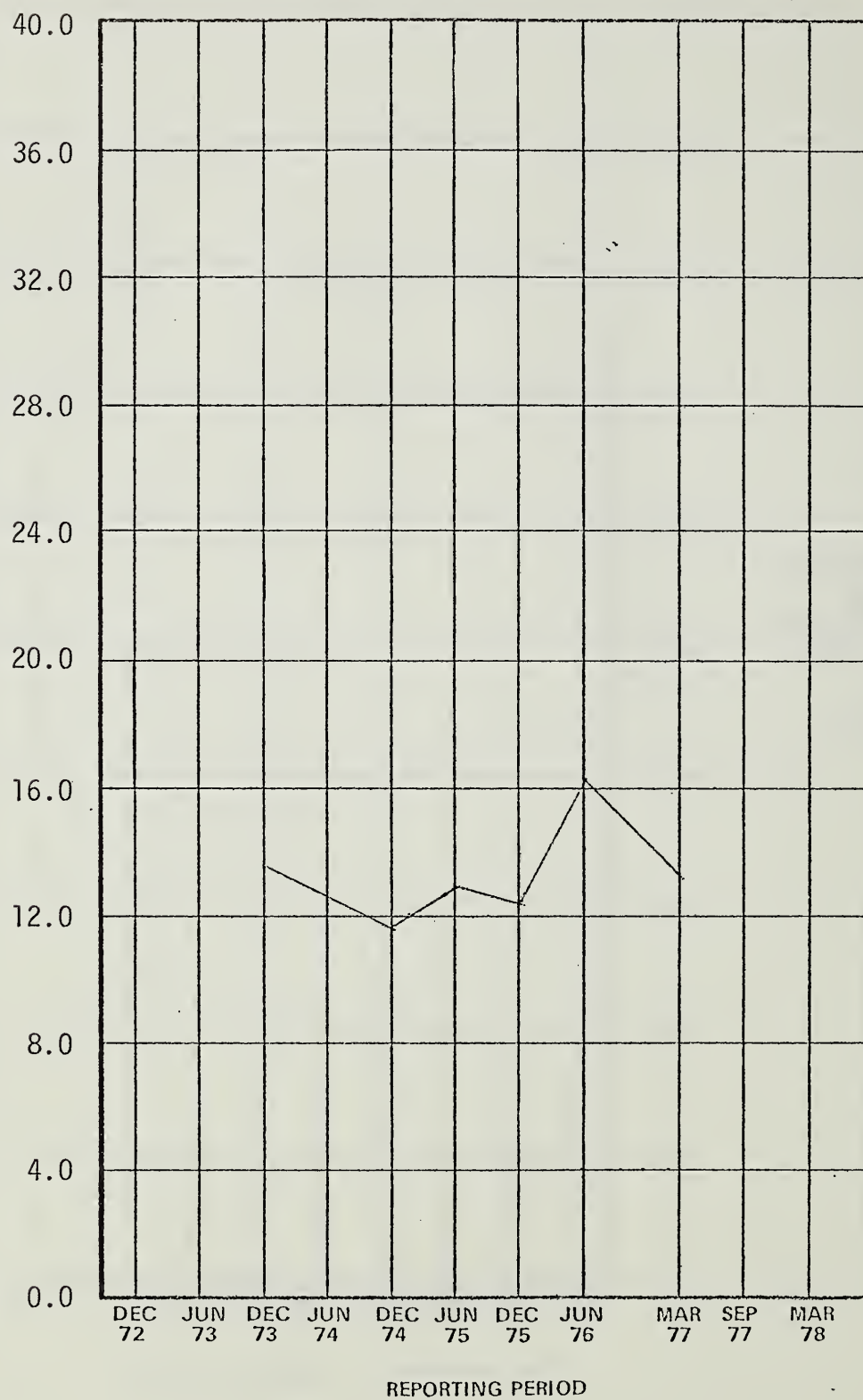


Figure 98

Differences
Between
Percentages;
FR#1-FR#4;
2244+;
Staggered

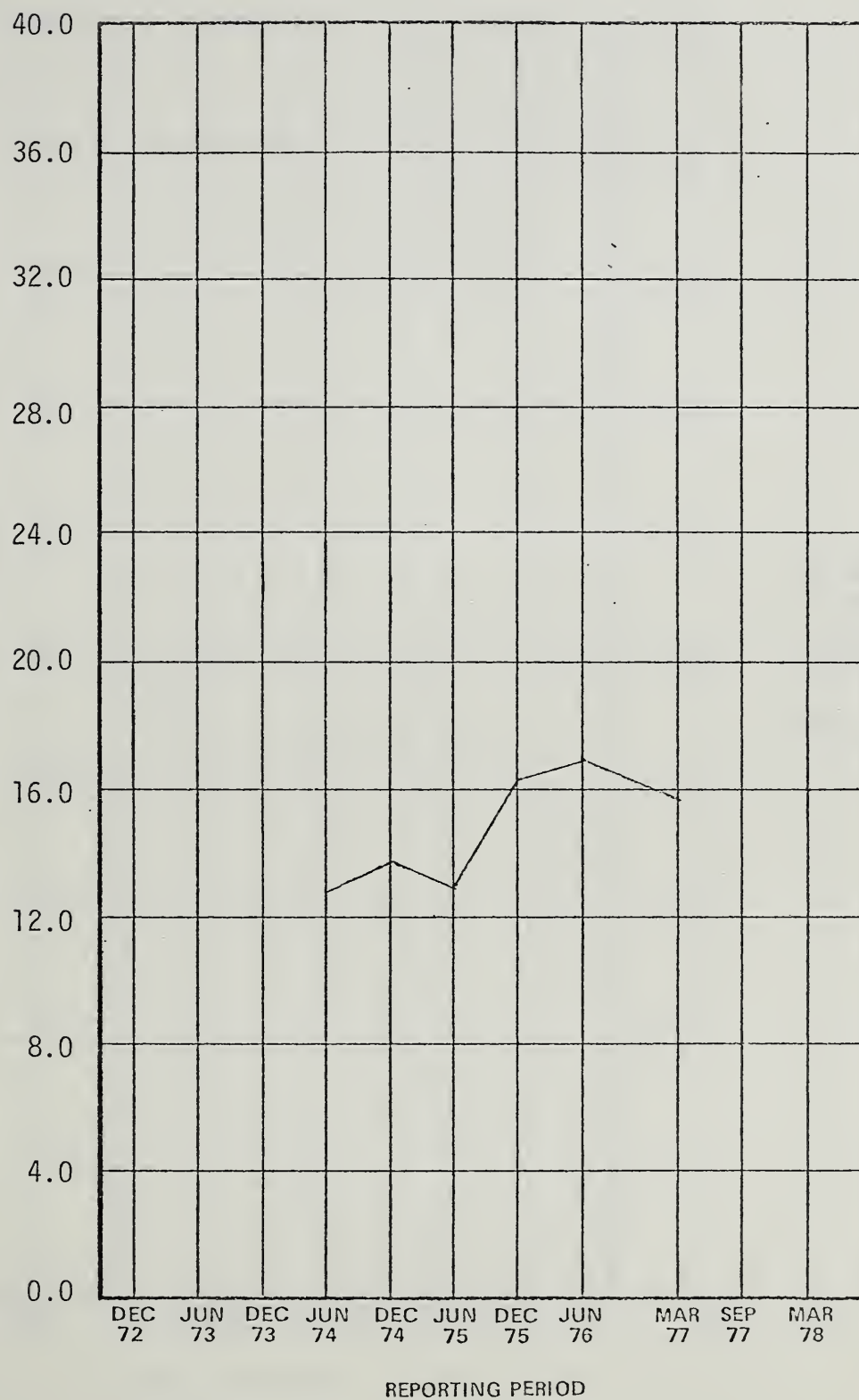


Figure 99

Differences
Between
Percentages;
FR#1-FR#3;
1111+;
Unstaggered

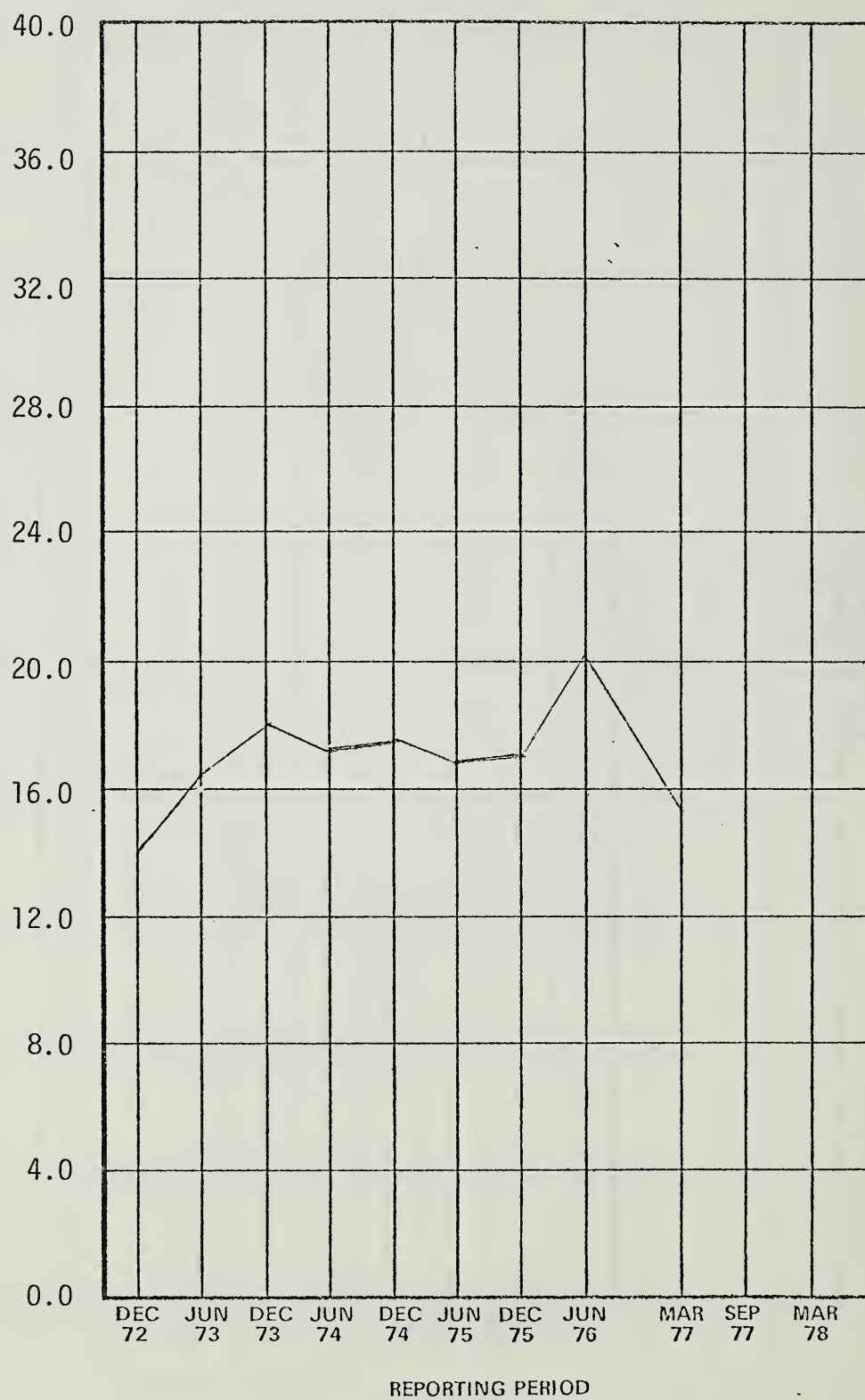


Figure 100

Differences
Between
Percentages;
FR#1-FR#3;
1111+;
Unstaggered

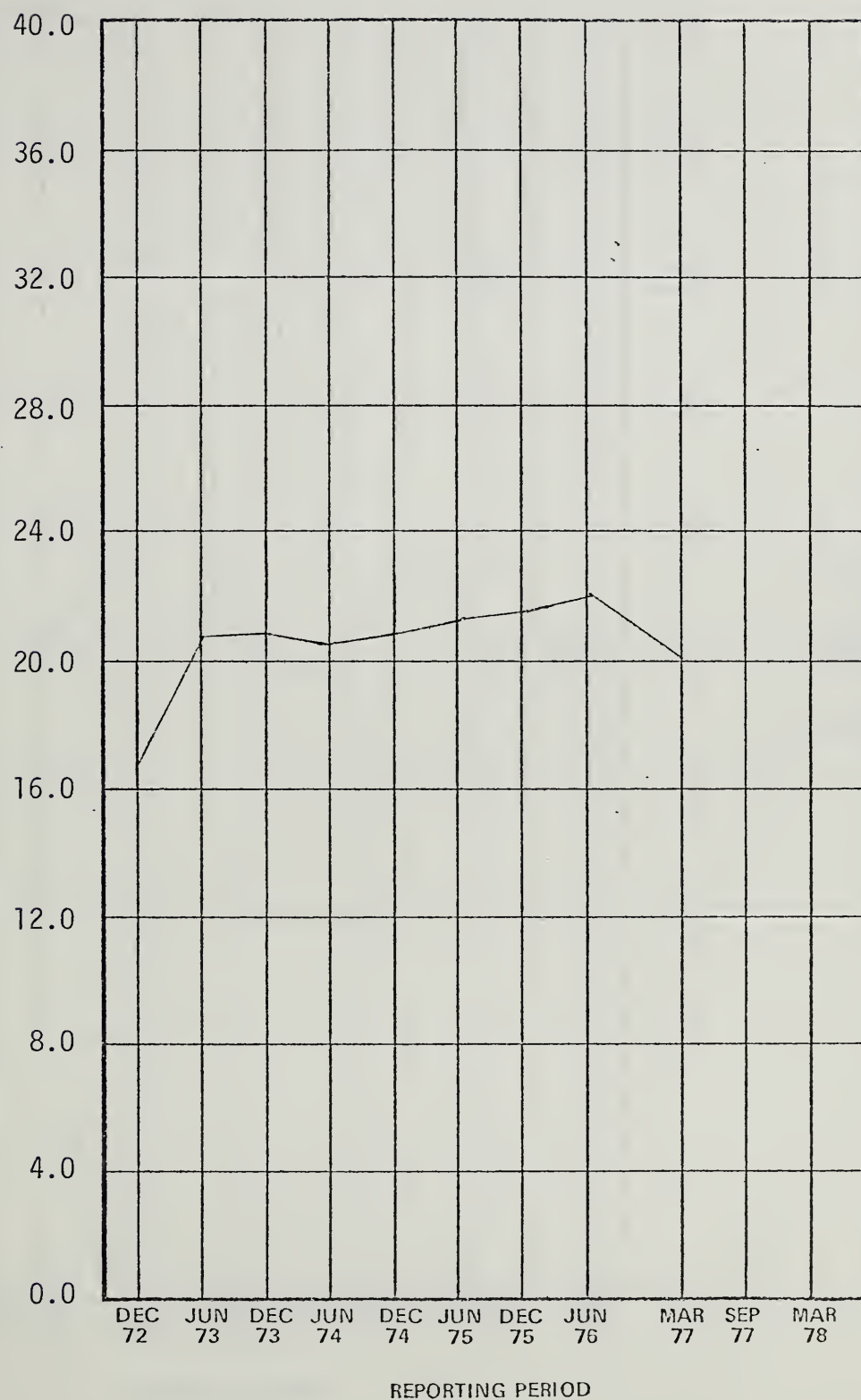


Figure 101

Differences
Between
Percentages;
FR#1-FR#4;
1111+;
Unstaggered

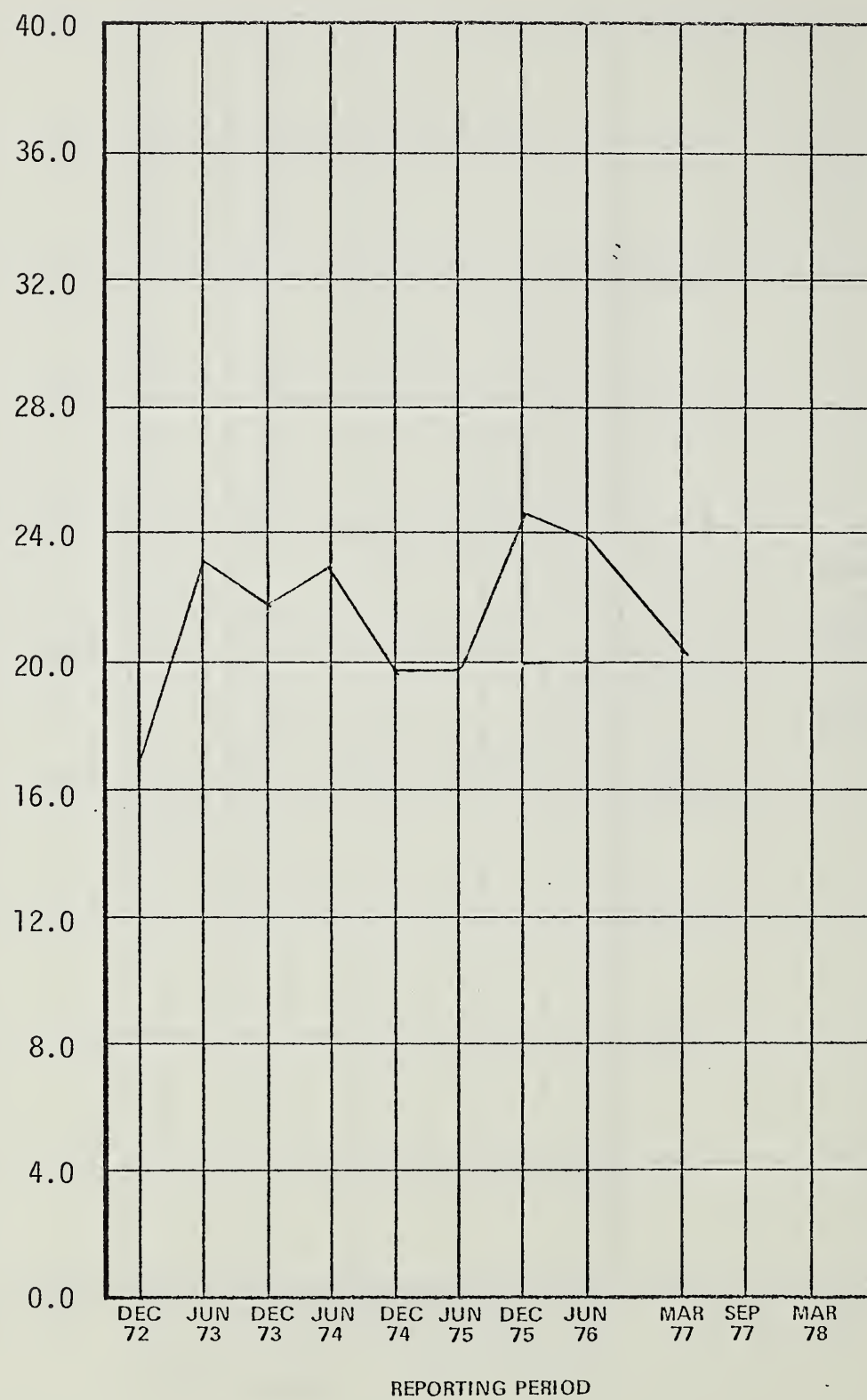


Figure 102

Differences
Between
Percentages;
FR#1-FR#5;
1111+;
Unstaggered

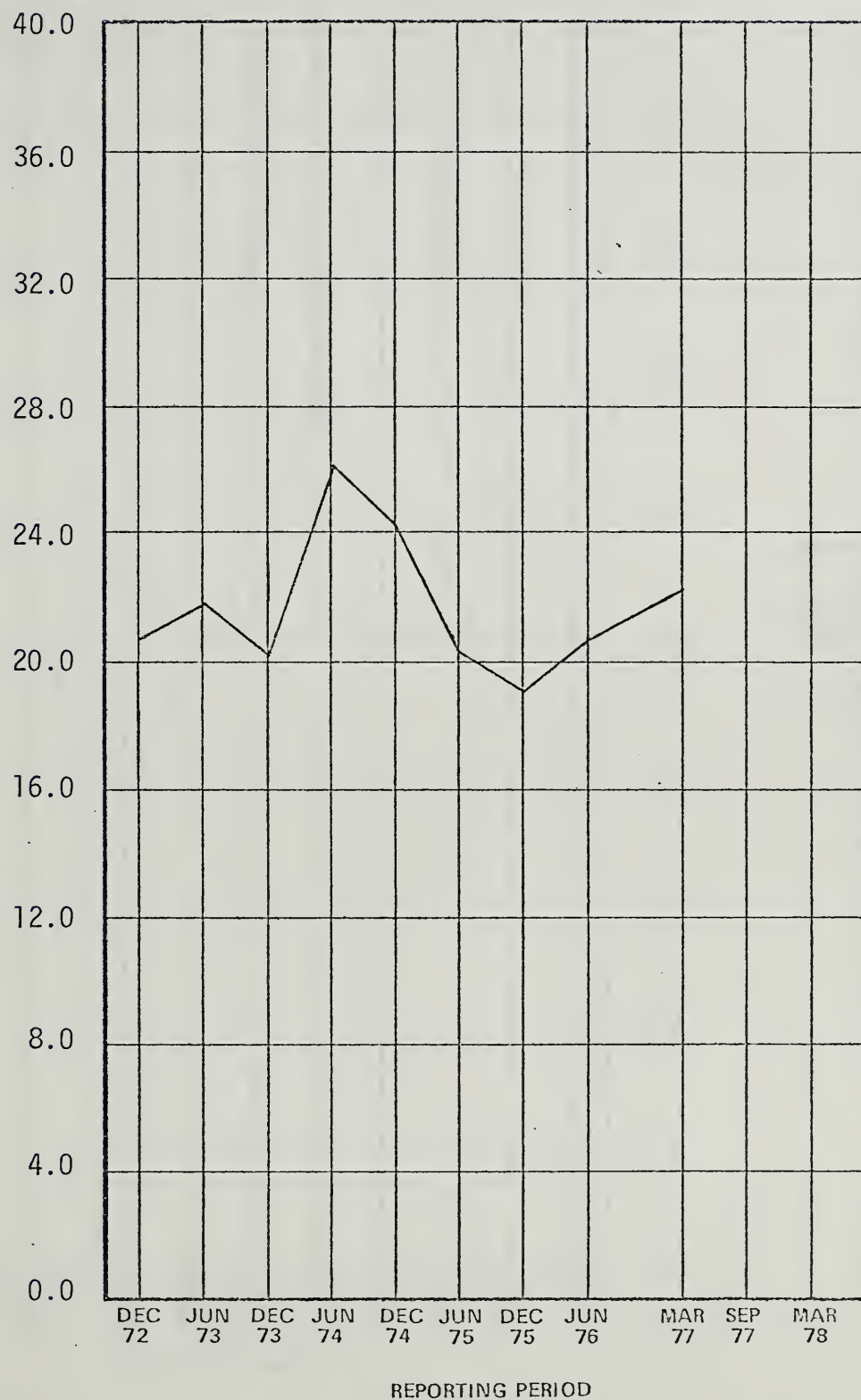


Figure 103

Differences
Between
Percentages;
FR#1-FR#6;
1111+;
Unstaggered

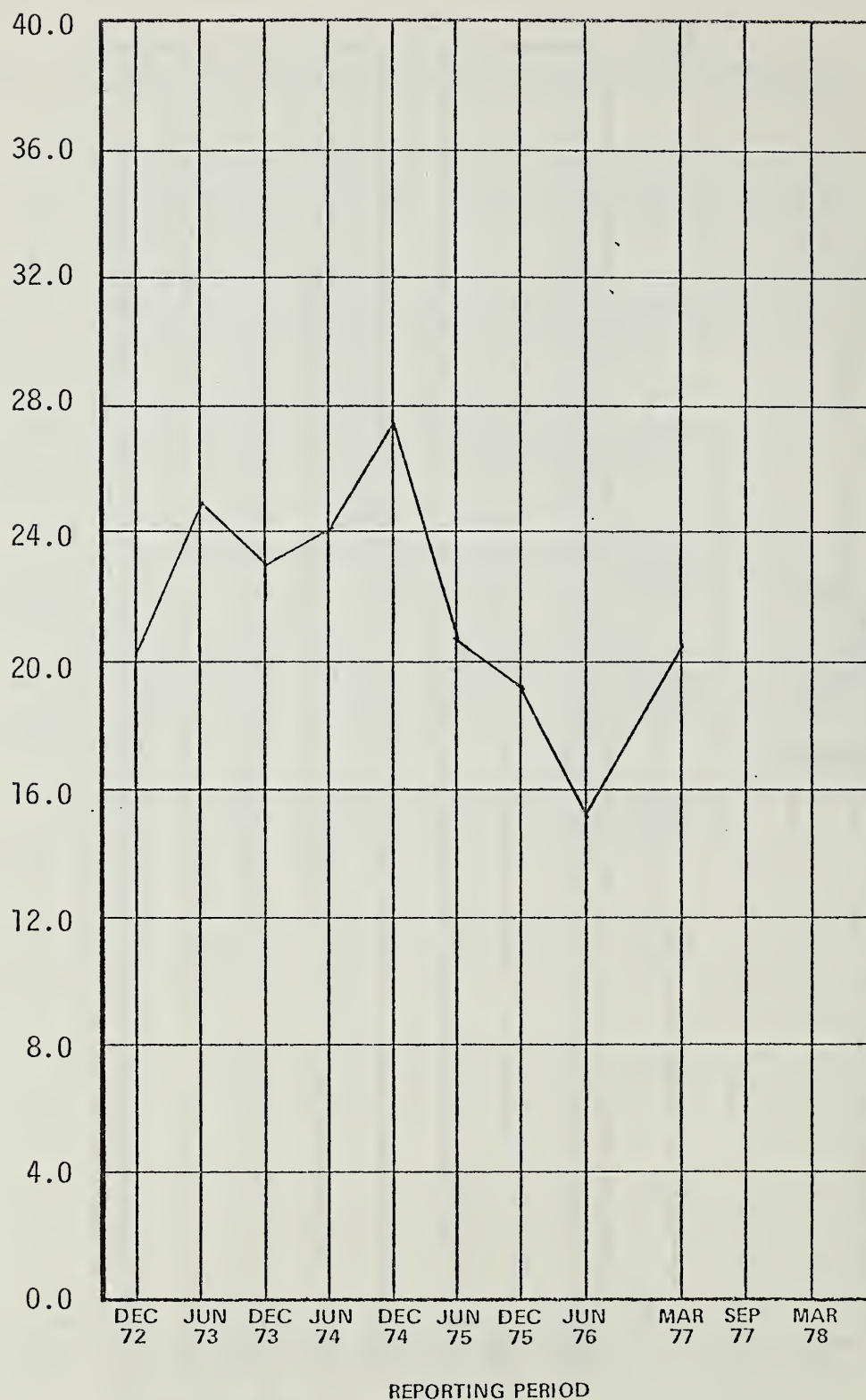


Figure 104

Differences
Between
Percentages;
FR#1-FR#7;
1111+;
Unstaggered

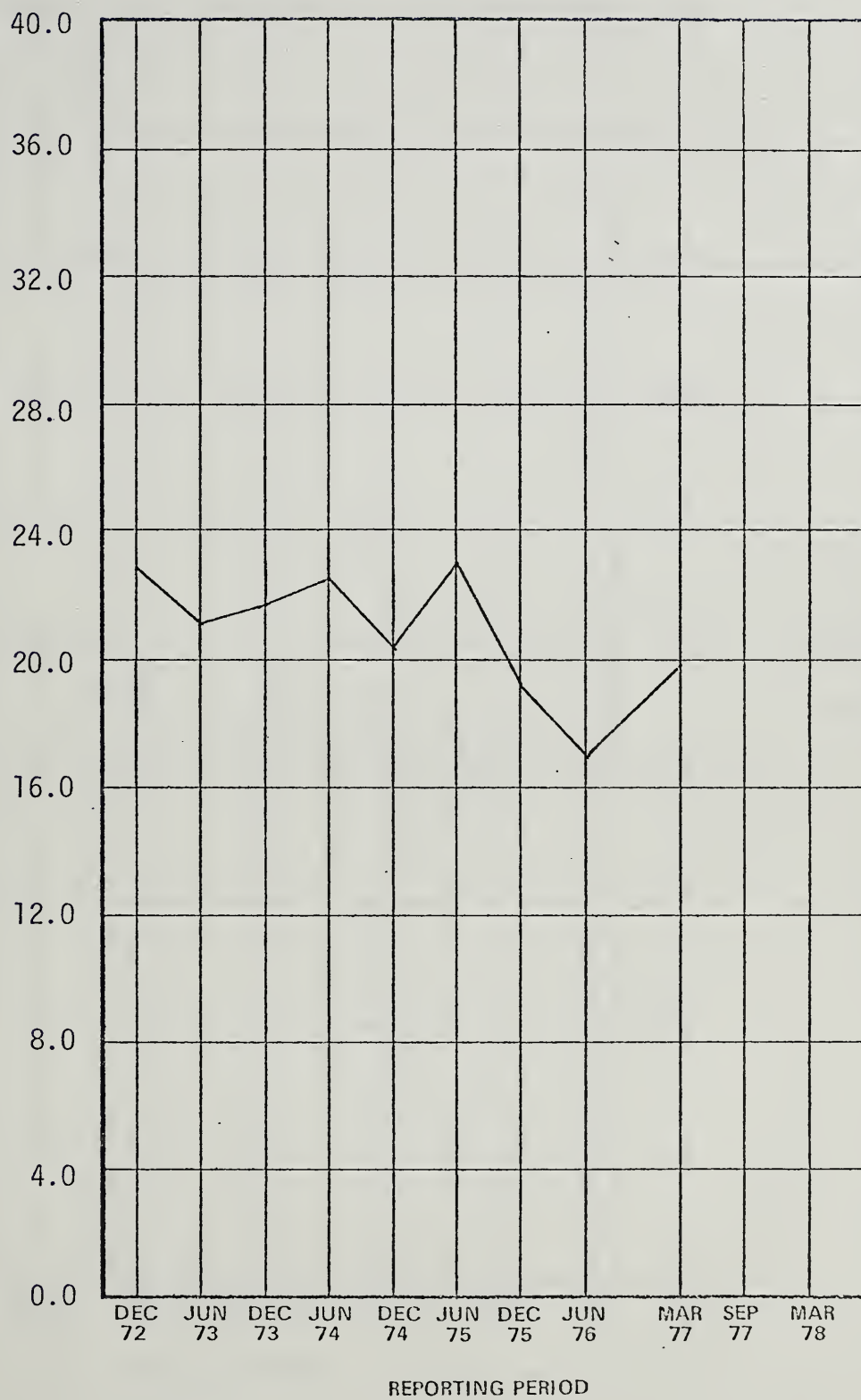


Figure 105

Differences
Between
Percentages;
FR#1-FR#2;
1111+;
Staggered

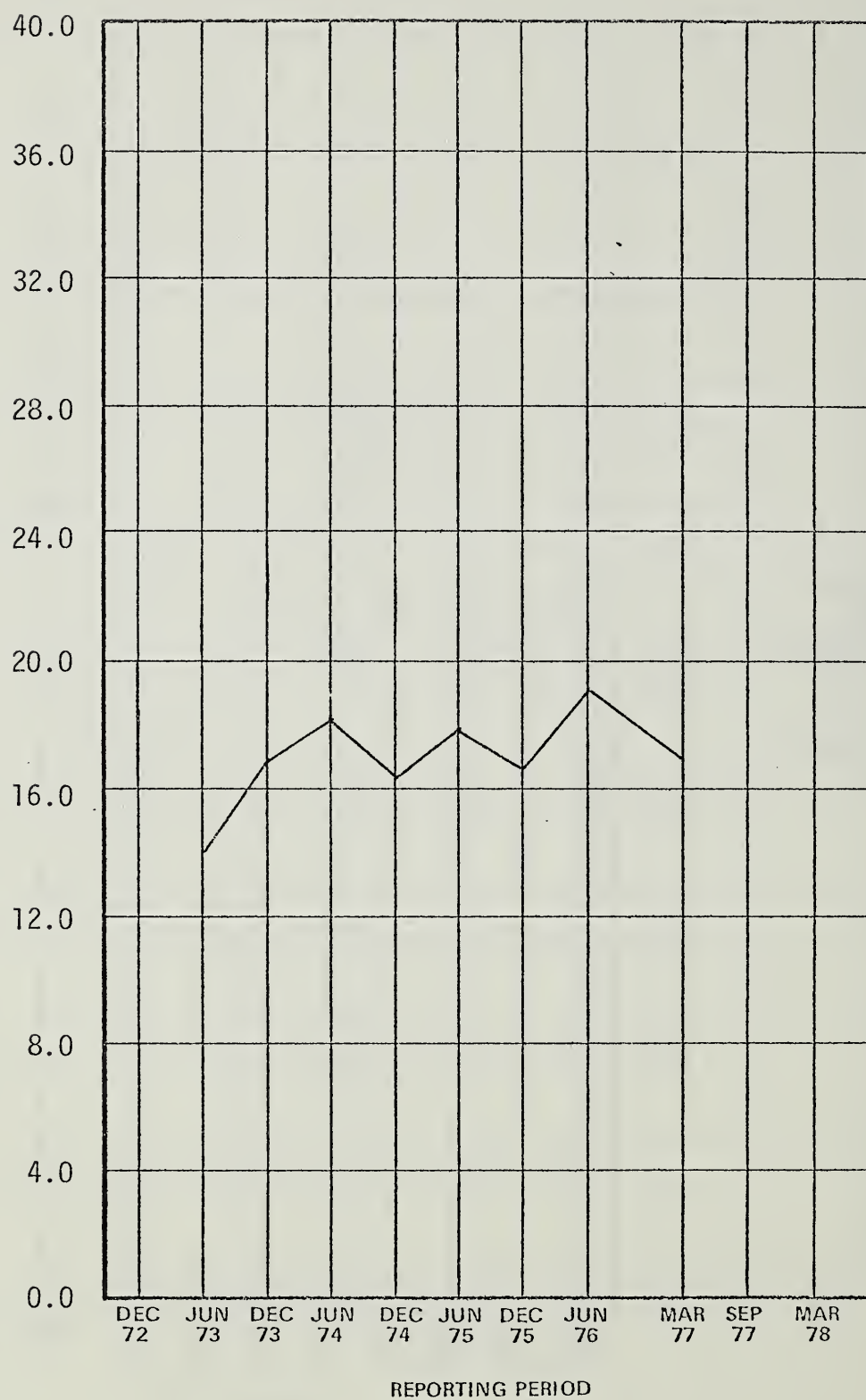


Figure 106

Differences
Between
Percentages;
FR#1-FR#3;
1111+;
Staggered

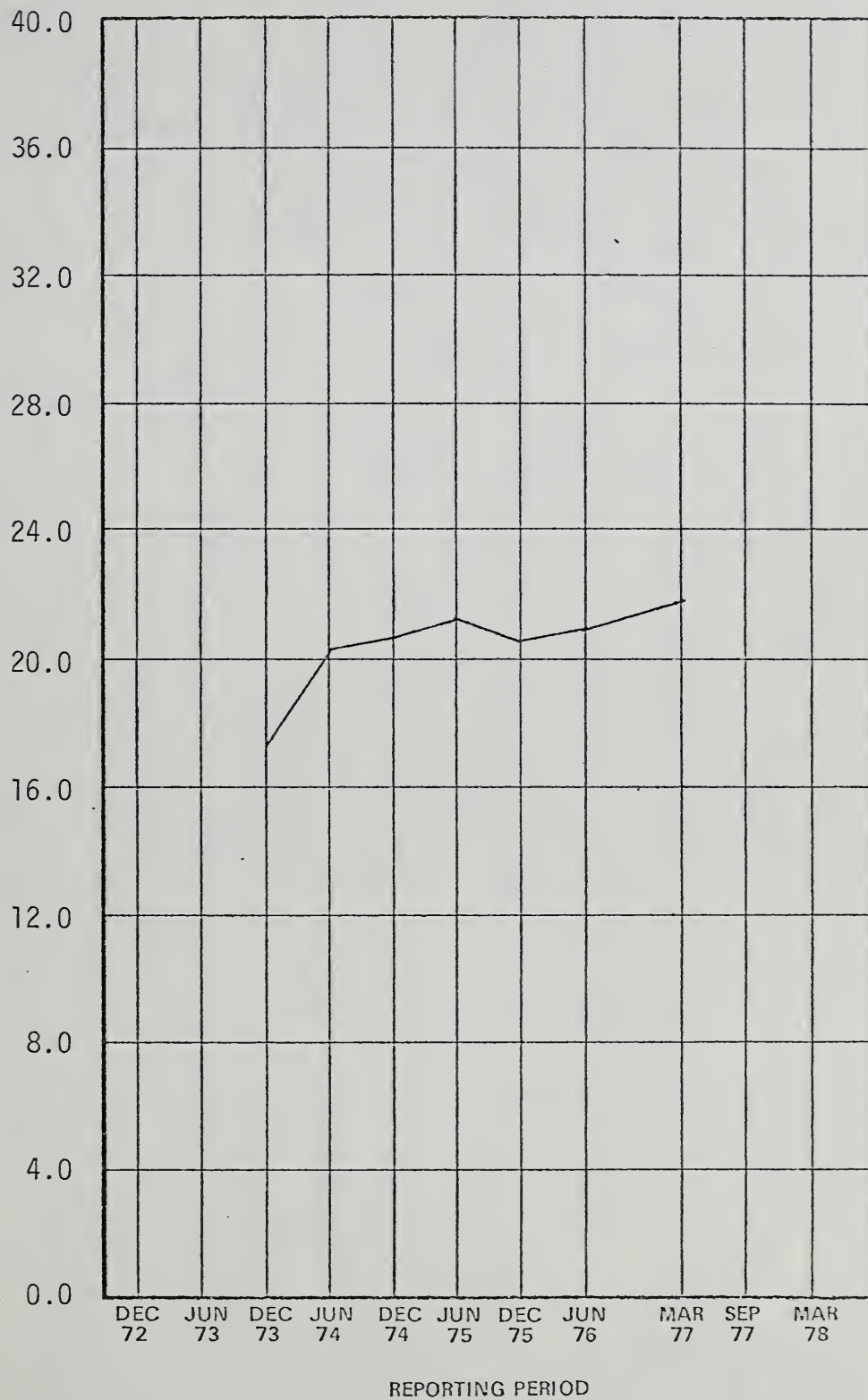


Figure 107

Differences
Between
Percentages;
FR#1-FR#4;
1111+;
Staggered

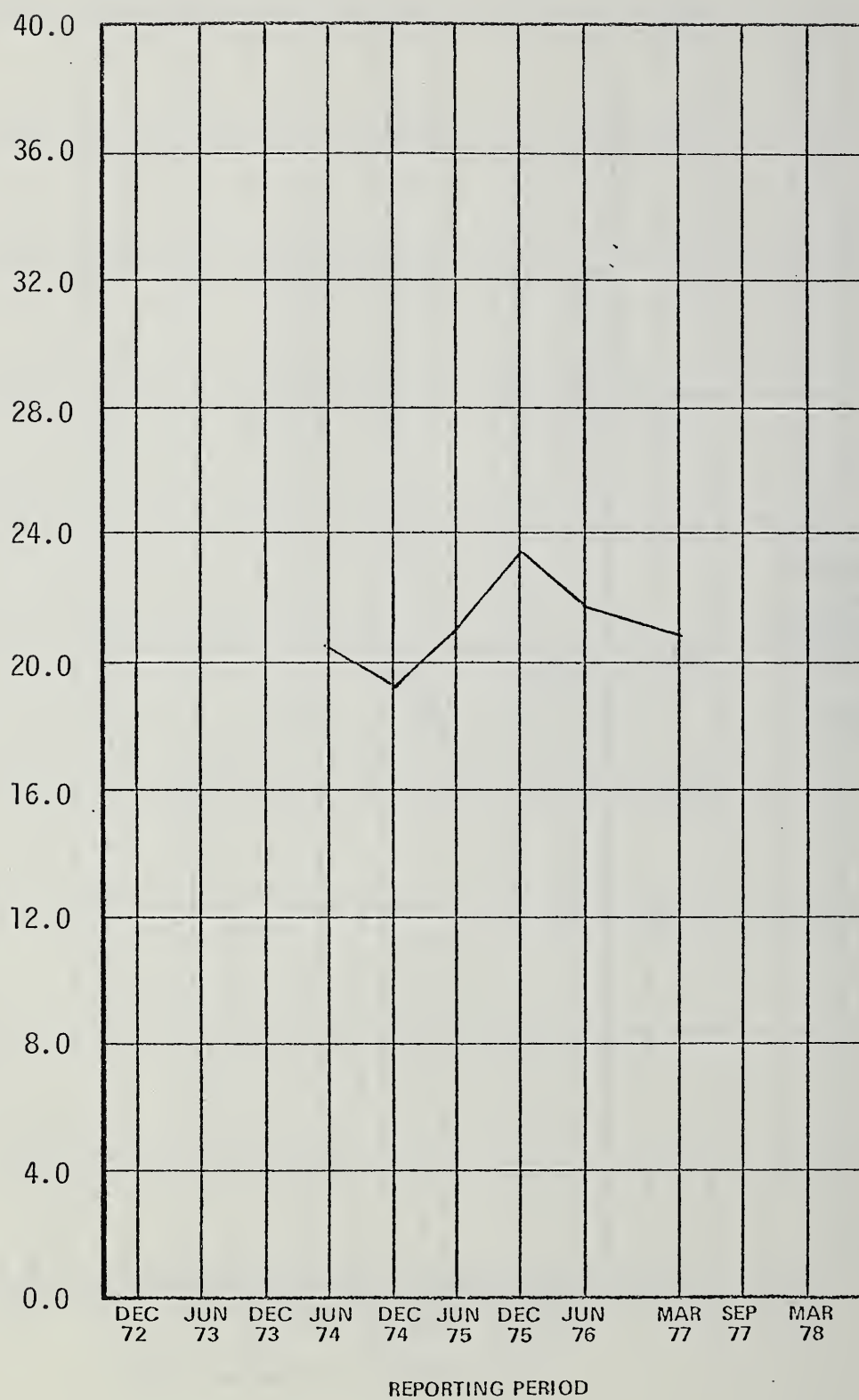


Figure 108

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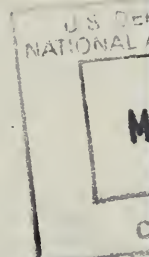
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EFNEP PROFILE PROJECT:

ADMINISTRATIVE REPORT



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CORPORATION

AD-33 Bookplate
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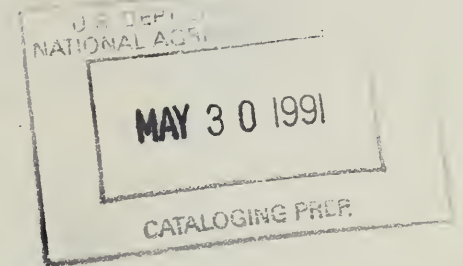
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EFNEP PROFILE PROJECT:
ADMINISTRATIVE REPORT



Submitted to:

SEA-Extension, USDA
South Agriculture Building
Washington, DC 20250.

Under Contract No.: 12-05-300-389

Submitted by:

SYNECTICS CORPORATION
4790 William Flynn Highway
Allison Park, Pennsylvania 15101

January 1979

144

SUMMARY

This project resulted from a desire on the part of the Science and Education Administration (SEA), United States Department of Agriculture (USDA) to fully exploit the contents of the national Reporting System of the Expanded Food and Nutrition Education Program (EFNEP). A collateral objective involved the preparation of a summary of the history of EFNEP. Execution of the project thus entailed five distinct tasks:

1. Correlation analyses in which variables reported for the various administrative units of EFNEP were correlated to identify regularities and associations useful to EFNEP management in guiding the evaluation of the Program.
2. Trend analyses, which examined changes in EFNEP national Reporting System variables over time.
3. Printout review, assessing and reviewing the accuracy and adequacy of periodic national Reporting System computer printouts.
4. National studies review, which evaluated national studies for adequacy of design and targeting.
5. Preparation of an EFNEP historical and statistical summary, which provides a perspective on the evolution and history of the Program.

The remainder of this section of the report summarizes results and implications of these activities.

Correlation Analyses

Correlations were run among eight classes of EFNEP variables: six classes of variables were derived from sample unit data (Program variables, family variables, Aide working style variables, family income and expenditure variables, homemaker variables, and food behavior variables); two classes were derived from data from the complete set of Program units (Program role variables and ethnic distribution variables). Only correlations with an absolute value equal to or greater than 0.30 (representing 9 percent explained variance) were considered in the analysis. While some clusters of high correlations were noted, these were in situations where such results were expected (e.g., there was confounding among the variables). Overall, there were no results with compelling implications for EFNEP operations. While it is necessary to avoid overinterpretation of correlations among these composite national Reporting System data, the results are consistent with the conclusion that EFNEP works equally well with all types of families.

Several characteristics of the dataset reduce the strength of any conclusions based on these correlations:

- ✓ The numerical data used are unit totals, percentages, or averages of participant and staff characteristics. Relationships which might be relatively strong if individuals were evaluated may be obscured.
- ✓ There is confounding across datasets, since some of the variables in, say, the March 1978 dataset are derived from the same families who contributed information for the September 1977 dataset. Thus, correlations may appear to be more stable than would be the case if truly independent samples had been drawn.
- ✓ The correlations describe only linear relationships; no attempt was made to determine the presence or significance of nonlinear relationships.

Trend Analyses

Trend analyses were run on 100 variables drawn from the EFNEP national Reporting System. Trend datasets and charts were prepared for these variables, and linear regression trend analyses performed. Because of changes in the national Reporting System, not all variables could be traced back to the beginning of the Program; data were gathered from the earliest point at which data were available. Results indicate:

- ✓ An improving impact of EFNEP on family food habits.
- ✓ Improving efficiency of EFNEP in involving Program homemakers in working sessions.
- ✓ Continuing success in locating and working with an appropriate target population.
- ✓ Increasing efficiency in involving 4-H youth in EFNEP.

For the March 1977, September 1977, and March 1978 datasets, separate data were available for EFNEP participants who received food stamps and those who did not. While three data points are insufficient for any usable analysis of trends, it is possible to note the observed differences between the two groups. EFNEP participating families which receive food stamps, in comparison with those which do not:

- ✓ Have much lower incomes.
- ✓ Have much lower food expenditures.
- ✓ Have substantially larger families.

- ✓ Have higher participation levels in all forms of assistance programs.
- ✓ Have a somewhat greater percentage of children in their families.
- ✓ Are more likely to be involved in individual, rather than group, working sessions.
- ✓ Have slightly younger homemakers.
- ✓ Have homemakers with somewhat less education.
- ✓ Have slightly worse diets at Program entry.

In general, it appears that EFNEP has either improved or remained stable with respect to available indices of Program quality and efficiency. There are, however, four areas where operations can be improved:

- ✓ Increasing the Program concentration on welfare recipients.
- ✓ Increasing the Program concentration on urban families.
- ✓ Concentrating on improvements in the "vegetables and fruits" food group for food stamp recipients.
- ✓ Concentrating on hiring black and Spanish-surname Aides in the same proportion as black and Spanish-surname homemakers.

Printout Evaluation

As originally conceived, the data to be used in this project were to have been derived directly from EFNEP national Reporting System printouts. In reviewing printout data, two general characteristics were evident:

- ✓ The data presented in EFNEP printouts are without exception useful for monitoring Program operations.
- ✓ EFNEP printouts appear to be well organized for presentation to EFNEP management personnel.

There were, however, some inconsistencies in the printout data which indicated some problems in either computer algorithms or misunderstandings among the various groups coordinating on printout specification and production. These problems included:

- ✓ Incorrect "average income" and "average food outlay" national, State, and class totals.
- ✓ Truncation (as opposed to rounding) by computer programs.

- ✓ Failure to weight national averages and summaries for ES-255 data drawn from sample units.
- ✓ Failure to weight national averages for the printouts comparing food stamp recipients with those not receiving food stamps.
- ✓ Production of potentially misleading percentages in the printouts comparing food stamp recipients with those not receiving food stamps.
- ✓ Inaccuracy of categorical percentages for the "homemaker age" category.

Some of these problems were corrected during the course of the project. These recalculations necessitated recalculation of trends for these data items. Others have not yet been recalculated.

The printout evaluation process resulted in a number of recommendations for alteration of EFNEP operations:

- ✓ Correction of printout errors which had not yet been changed by the end of the project.
- ✓ Establishment of procedures for printout review, including suggestions for the kinds of expertise which the reviewers should possess.
- ✓ Clarification of weighting and sampling strategies.
- ✓ Incorporation of new printout variables, including:
 - Percentage of family income spent on food.
 - Food consumption percentage increases for various food recalls (after the first) expressed as a percentage of the percentage for that food group for the first food recall.
 - Food consumption percentage increases for various food recalls (after the first) expressed as a percentage of the percentage for that food group on the first food recall corresponding to the date of Program entry.
 - Number of homemakers completing food recalls 2 through 6 expressed as a percentage of the number of homemakers reporting on food recall 1 for the appropriate previous reporting period.
 - Program family turnover rate.
 - Aide turnover rate.

- Ratio of percentage of Aides in a given racial/ethnic group to percentage of homemakers in the same racial/ethnic group.
 - Percentage of Volunteers working with given groups.
 - Percentage of youth from Program families and non-Program families.
 - 4-H youth per Program family.
- ✓ Inclusion of external information in printout processing, including:
- Consumer price index data.
 - Family size data.
 - Educational attainment data.
 - Age distribution data.
 - Racial/ethnic distribution data.
- ✓ Inclusion of new printouts, including:
- EFNEP trend listings.
 - EFNEP trend charts.

Review of National Studies

No serious design defects were noted in any of the 12 national studies reviewed. Conclusions appeared to be consistent with available data in all cases. Suggestions for the focus of future national studies include:

- ✓ Tracking individual homemakers through the Program.
- ✓ Comparisons of EFNEP homemakers with middle-class homemakers.
- ✓ Employment of knowledge measures in EFNEP.
- ✓ Use of follow-up knowledge measures.
- ✓ Study of Program youth knowledge and food behaviors.
- ✓ Follow-up of 4-H youth nutritional behaviors and knowledge.
- ✓ Follow-up of Aide characteristics.

- ✓ Study of relative effectiveness of individual versus group instruction.
- ✓ Follow-up on families leaving the Program for reasons other than graduation.
- ✓ Study of reasons for nonparticipation.
- ✓ Study of characteristics of nonparticipating families.
- ✓ Study of correlates of Aide effectiveness.
- ✓ Detailed study of food stamp reciprocity among EFNEP participants.
- ✓ Validation of food recall data.

Preparation of the EFNEP Profile

A 131 page historical and statistical profile of EFNEP was produced during the course of this project. This profile includes information on: the foundations of EFNEP; EFNEP evaluation; and summary accomplishments of EFNEP. Data are presented in a manner consistent with the document's use by personnel who are (a) not necessarily intimately familiar with EFNEP, and (b) not necessarily expert in the interpretation of the results of statistical analysis. This profile is reproduced in its entirety as Appendix D of this report.

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INTRODUCTION

This project was commissioned by the Science and Education Administration of the United States Department of Agriculture to review and exploit information collected in the national Reporting System of the Expanded Food and Nutrition Education Program (EFNEP). A related objective was to provide to SEA-Extension an historical and statistical profile of EFNEP, which has been operating since early 1969. This report describes methodology, results, and conclusions in four primary areas:

- ✓ Correlation analyses, which were performed to investigate patterns of relationships among EFNEP datasets which could be used to assist EFNEP management in more accurately focusing Program operations.
- ✓ Trend analyses, aimed at reviewing the history of the Program in statistical terms. An examination of trends was performed to ascertain in what areas the Program was improving or degrading in its activities.
- ✓ Printout review, in which the computer printouts received by EFNEP management were assessed with respect to the utility of information presented in comparison with the types of information received from the operational EFNEP units.
- ✓ National studies review, in which various large-scale studies commissioned by SEA-Extension were evaluated and summarized.

The remainder of this report discusses each of these areas in detail. In addition, a popularized version of the historical and statistical profile of EFNEP, which appears as a separate document, is included as an appendix. Other appendices present trend charts and data tables for the analyses discussed in the main body of the report.

CORRELATION ANALYSES

Methodology in Correlation Analysis

Product moment correlation coefficients were calculated for a selected subset of variables included in the EFNEP Unit and Sample Reports. The purpose was to attempt to identify associations among variables and groups of variables having a high potential for indicating changes in EFNEP operations which could increase EFNEP efficiency, effectiveness, and targeting.

For clarity and convenience, EFNEP variables have been clustered into eight groups. Six groups of variables were derived from the Sample Unit data:

1. Program variables, including number of Program families and the total number of persons in the Program families.
2. Family variables, including average number of persons per family, number and schooling status of children in families, school lunch participation of children, and participation in food stamps, welfare, and Farmer's Home Administration.
3. Aide working style variables, including the percentage of Program families worked with in the reporting months, the setting in which Program families participated (individual, group, both), and Aide visits per Program family.
4. Family income and expenditure variables, including income category of the family, income reported on the food recalls, amount spent for food, and percentage of income spent for food.
5. Homemaker variables, including age category and education level.
6. Food behavior variables, including consumption patterns in each of the Four Food Groups, attainment of at least one serving in each of the Four Food Groups, and attainment of completely adequate diets (2244 or greater). In addition, difference scores for successive food recalls were calculated and included in the analysis.

Two additional groups of variables were derived from unit reports:

1. Program role variables, which characterize the numbers, turnover, and/or activity modes of Program personnel (homemakers, Aides, Volunteers, and youth) within units.
2. Ethnic distribution variables, which describe the percentages of Program personnel in various ethnic categories.

Four points should be emphasized as a preface to a discussion of analytic results:

1. No correlations with an absolute value of less than 0.300 are discussed as indicating true relationships among Program variables. Figures lower than 0.300 mean that less than 9 percent of the variability in the figures was accounted for by the relationship between the variables. Lower correlation values can occur quite often on the basis of chance, and are generally not useful for planning and administrative guidance.
2. These analyses have been guided by the results of the March 1977 analyses reported previously (Gates, 1977), in which a number of correlations of manifest practical significance (i.e., with absolute values greater than 0.300) appeared to be the result of random (chance) fluctuations in the data. To reduce the amount of discussion of these spurious correlations, the September 1977 and March 1978 correlation results have been considered jointly. Only situations in which correlations for both reporting intervals exceeded + 0.300 will be discussed here. This method reduces the likelihood that spurious correlations will be discussed by requiring a relationship remain stable of some nontrivial strength over two consecutive reporting periods. If measures at the two reporting periods truly represented separate random samples, the probability of obtaining two correlations greater than a given absolute value would be roughly p^2 , where p is the probability of obtaining a correlation at that level for a given number of observations. It should be noted, however, that the September 1977 and March 1978 datasets are not in fact independently drawn samples. There is considerable overlap in the sets of sampled units, and also in the set of homemakers from which the data were derived. Thus, the potential for spurious correlations continues to exist.
3. In interpreting the results presented herein, the reader must bear in mind that the variables used in the analyses are totals, percentages, and averages of unit characteristics, not characteristics of the homemakers themselves. The inability to identify the characteristics and progress of individual homemakers implies that any results of this kind of analysis should be considered with care. Ideally, they will be best employed to define more detailed and controlled studies of the characteristics in question, rather than being used to define EFNEP procedures directly.
4. For intercorrelations among sample variables, separate analyses were performed for food stamp recipients (FS), food stamp nonrecipients (NFS), and the combined total of the two groups. Where differences among the three groups occur, they are highlighted. Separate FS and NFS subsets were not available for the unit data, however; correlations between unit variables and sample variables were limited to the total (FS and NFS) group.

Discussions of the results of the analyses are organized as indicated in Figure 1. This figure may be used as a guide to investigation of particular kinds of relationships in which the reader may be interested.

Results of Correlation Analysis

Food Behavior Variables X Program Role Variables

No consistent correlations were found in the combined, food stamp, or non-food stamp datasets.

Food Behavior Variables X Racial/ Ethnic Background Variables

Several patterns of correlation emerged in this category:

- ✓ Units with high percentages of white homemakers had a slight tendency to have low percentages in the "2 or more servings of meat" on Food Recall #3 (September 1977 $r = -0.307$; March 1978 $r = -0.306$).
- ✓ Unit with relatively high percentages of Spanish-surname homemakers, Aides, Volunteers, and youth had a moderate tendency to have high percentages of homemakers reporting no servings of vegetables and fruits on Food Recalls beyond the sixth record (for September 1977, r 's ranged between 0.48 and 0.68; for March 1978, r 's ranged between 0.31 and 0.39).
- ✓ Units with high percentages of Spanish-surname homemakers tend slightly to have low percentages of homemakers reporting minimum diets (at least one serving in each food group) on Food Recalls later than the sixth (September 1977 $r = -0.345$; March 1978 $r = -0.393$).
- ✓ Units with a high percentage of white Aides had a slight tendency to have a low percentage of homemakers reporting two or more servings of meat on Food Recall #2 (September 1977 $r = 0.302$; March 1978 $r = -0.373$).

None of these relationships fits into an overall pattern of food consumption; we tend to believe that the results are spurious. The correlations indicating high correlations with consumption patterns as measured on Food Recall #7 or later Food Recalls are particularly suspect, since these generally reflect the dietary habits of very few homemakers and are among the least reliable data collected by EFNEP.

Food Behavior Variables X Program Variables

No Consistent correlations were found in the combined, food stamp, or non-food stamp datasets.

		UNIT DATA		SAMPLE DATA					
		Program Role Variables	Ethnic Background Variables	Program Variables	Family Variables	Homemaker Variables	Aide Working Style Variables	Family Income and Expenditure Variables	Food Behavior Variables
SAMPLE DATA	Food Behavior Variables	p. 4	p. 4	p. 4	p. 6	p. 6	p. 6	p. 6	p. 6
	Family Income and Expenditure Variables	p. 6	p. 7	p. 7	p. 8	p. 8	p. 10	p. 10	
	Aide Working Style Variables	p. 10	p. 10	p. 11	p. 11	p. 11	p. 11		
	Homemaker Variables	p. 11	p. 11	p. 11	p. 12	p. 13			
	Family Variables	p. 13	p. 13	p. 14	p. 14				
	Program Variables	p. 15	p. 15	p. 15					
UNIT DATA	Ethnic Background Variables	p. 15	p. 15						
	Program Role Variables	p. 16							

FOOD BEHAVIOR VARIABLES (% of families reporting servings in food groups)

FAMILY INCOME AND EXPENDITURE VARIABLES (family income; family food expenditures)

AIDE WORKING STYLE VARIABLES (% of families worked with individually, in groups, both)

HOMEMAKER VARIABLES (homemaker age, education)

FAMILY VARIABLES (persons per family, number and schooling of children, food stamp, welfare, FHA, etc.)

PROGRAM VARIABLES (number of Program families; total persons)

ETHNIC BACKGROUND VARIABLES (% of homemakers, aides, youth, volunteers in racial/ethnic categories)

PROGRAM ROLE VARIABLES (numbers, activity modes of Program participants and staff)

Figure 1. Page Numbers of Discussion of Results of Correlation Analysis Among Classes of Variables

Food Behavior Variables X Family Variables

For the food stamp subset units, there was a weak tendency for units with a high percentage of family members active in school lunch programs to have a high percentage of homemakers reporting two or more servings of meat on Food Recall #4. This pattern of relationships did not hold for the combined or non-food stamp groups. The relationship is probably spurious, and in any event does not have any important implications for EFNEP operations.

Food Behavior Variables X Homemaker Variables

No consistent correlations were found in the combined, food stamp, or non-food stamp groups.

Food Behavior Variables X Family Income and Expenditure Variables

In the combined group units, there was a weak tendency for high average monthly incomes (as reported on Food Recall #1) to be positively associated with a high percentage of homemakers reporting no servings of milk on Food Recall #6 (September 1977 $r = 0.300$; March 1978 $r = 0.314$). Again, we suspect a spurious relationship; data from Food Recall #6 reflect measures on only a very small percentage of EFNEP homemakers.

Aide Working Style Variables X Food Behavior Variables

For the non-food stamp group, there was a slight tendency for units with a high percentage of urban residents to also have a high percentage of homemakers reporting no servings of milk on Food Recalls later than six (September 1977 $r = 0.438$; March 1978 $r = 0.337$). Food Recalls later than six reflect the results of few Program homemakers; these results are probably spurious. There are, at any rate, no clear implications for EFNEP operations.

Food Behavior Variables X Food Behavior Variables

Since these data are highly confounded, intercorrelations were not examined.

Family Income and Expenditure Variables X Program Role Variables

No consistent correlations were found in the combined, food stamp, and non-food stamp groups.

Family Income and Expenditure Variables X Racial/Ethnic Background Variables

A number of patterns emerged in this category. For the combined dataset:

- ✓ Units reporting a high percentage of families in the \$168-\$250 per month category had a slight tendency to have a high percentage of black youth (September 1977 $r = 0.332$; March 1978 $r = 0.315$).
- ✓ Units reporting a high percentage of homemakers in the "greater than \$418 per month" category also tended to have a low percentage of:
 - Black homemakers (September 1977 $r = -0.351$; March 1978 $r = -0.302$).
 - Oriental homemakers (September 1977 $r = -0.309$; March 1978 $r = -0.358$).
 - Black youth (September 1977 $r = -0.378$; March 1978 $r = -0.320$).
- ✓ Units having a high average income on Food Recall #3 had a slight tendency to have low percentages of black homemakers (September 1977 $r = -0.384$; March 1978 $r = -0.316$) and black youth (September 1977 $r = -0.379$; March 1978 $r = -0.327$).
- ✓ Units reporting high food expenditures on Food Recalls #1 and #3 also had a slight tendency to have high percentages of Spanish-surname homemakers, Aides, youth, and Volunteers (September 1977 r 's range from 0.34 to 0.37; March 1978 r 's range from 0.31 to 0.42).

These figures are relatively consistent. The correlations with black homemakers tend to substantiate the generally suppressed income levels of blacks. The positive correlations involving Spanish-surname families are more difficult to interpret; they may indicate a tendency for Spanish-surname families to spend larger amounts of money on food. On the other hand, the high inter-correlations among percentages of Spanish-surname homemakers, Aides, Volunteers, and youth (see "Racial/Ethnic Background Variables X Racial/Ethnic Background Variables," page 15) may simply indicate the proliferation of a spurious relationship. If the relationships are valid, the implication is simply that EFNEP should maintain its focus on minority families, since they appear to be particularly in need of EFNEP services.

Family Income and Expenditure Variables X Program Variables

No consistent correlations were found in the combined, food stamp, or non-food stamp datasets.

Family Income and Expenditure
Variables X Family Variables

No consistent relationships were observed for the combined and food stamp groups. For the non-food stamp group:

- ✓ Units with a high percentage of family members under 19 years of age also tended slightly to have a low percentage of families with an income of \$168 to \$250 per month (September 1977 $r = -0.341$; March 1978 $r = -0.323$).
- ✓ Units reporting high average food expenditure on Food Recall #4 had a slight tendency to have a high percentage of family members under 19 years of age (September 1977 $r = 0.346$; March 1978 $r = 0.303$).
- ✓ Units reporting high average incomes on Food Recalls past six had a slight tendency to have a low percentage of welfare recipients (September 1977 $r = -0.395$; March 1978 $r = -0.398$).

These relationships do not appear to be highly consistent, and have no clear implications for EFNEP operations.

Family Income and Expenditure
Variables X Homemaker Variables

A number of relationships exist between age and income and education and income. For the combined group:

- ✓ Units reporting high percentages of homemakers with less than an eighth grade education also tended slightly to have:
 - High percentages of families in the \$168-\$250 monthly income range (September 1977 $r = 0.307$; March 1978 $r = 0.338$). This pattern of relationships does not hold for either the food stamp or non-food stamp subsets.
 - Low percentages of families in the "greater than \$418 per month" income group (September 1977 $r = -0.304$; March 1978 $r = -0.379$). No pattern was observed for the food stamp subgroup, but that for the non-food stamp subgroup was similar (September 1977 $r = -0.312$; March 1978 $r = -0.384$).
 - High average incomes as reported on Food Recalls greater than six (September 1977 $r = -0.372$; March 1978 $r = -0.372$). No consistent set of relationships existed in the food stamp or non-food stamp groups.
 - High average food expenditures as reported on Food Recalls greater than six (September 1977 $r = -0.383$; March 1978 $r = -0.303$). Again, no consistent relationships were observed for the food stamp and non-food stamp groups.
- ✓ Units reporting a high percentage of homemakers in the 25-55 year-old age group also tended slightly to have high percentages of families in the \$168-\$250 per month income group

(September 1977 $r = -0.347$; March 1978 $r = -0.352$). This pattern was not evident for the food stamp group, but was even stronger in the non-food stamp group (September 1977 $r = -0.531$; March 1978 $r = -0.612$).

- ✓ Units reporting a high percentage of homemakers in the 25-55 year-old group also tended slightly to have high average monthly incomes as reported on Food Recalls greater than six (September 1977 $r = +0.353$; March 1978 $r = 0.339$). Similar correlations were observed for the food stamp subgroup (September 1977 $r = 0.341$; March 1978 $r = 0.369$), but no pattern was present in the non-food stamp group.
- ✓ Units reporting a high percentage of homemakers greater than 55 years old had slight to moderate tendencies to have:
 - High percentages of families in the \$168-\$250 per month income category (September 1977 $r = 0.443$; March 1978 $r = 0.408$). These relationships held at somewhat reduced levels for the food stamp subgroup (September 1977 $r = 0.312$; March 1978 $r = 0.355$) and at increased levels for the non-food stamp subgroup (September 1977 $r = 0.612$; March 1978 $r = 0.553$).
 - High average incomes are reported on Food Recalls greater than six (September 1977 $r = -0.342$; March 1978 $r = -0.541$). The relationships held at similar average levels for the food stamp subgroup (September 1977 $r = -0.362$; March 1978 $r = -0.485$) and the non-food stamp subgroup (September 1977 $r = -0.448$; March 1978 $r = -0.496$).

In addition to the relationships discussed above, a number of other patterns emerged for the non-food stamp group only:

- ✓ Units with a high percentage of 25-55 year-old homemakers showed a slight to moderate tendency to have:
 - Lower percentages of families in the \$81-\$167 per month income range (September 1977 $r = -0.540$; March 1978 $r = -0.448$).
 - Higher percentages of families in the "greater than \$418 per month" income category (September 1977 $r = 0.427$; March 1978 $r = 0.394$).
- ✓ Units with a high percentage of homemakers over 55 years of age showed a slight tendency to have:
 - Higher percentages of families with incomes in the \$81-\$166 per month category (September 1977 $r = 0.502$; March 1978 $r = 0.347$).
 - Lower average incomes as reported on Food Recall #4 (September 1977 $r = -0.305$; March 1978 $r = -0.313$).

There is some consistency in this information, though many of the relationships involve variables with typically low reliabilities (i.e., income and expenditure variables from later Food Recalls). In general, however, the data point to the positive aspects of education on income, and also to the fact that homemakers in the middle age category (25-55 years) have higher incomes than older homemakers. The reasons for this latter relationship are not obvious in the data as presented here, but may involve:

- ✓ Older homemakers with smaller families have lower AFDC payments.
- ✓ Greater percentage of older homemakers receiving relatively low social security or pension payments.
- ✓ Reduced employment among older homemakers.

The generally stronger relationships for the non-food stamp subgroup are also difficult to explain. It is possible that the higher participation in food and welfare assistance programs among this subgroup has a leveling effect on income, thus reducing the impact of low education and old age.

Family Income and Expenditure Variables X Aide Working Style Variables

No consistent correlations were found in the combined, food stamp, or non-food stamp groups.

Family Income and Expenditure Variables X Family Income and Expenditure Variables

No consistent relationships (beyond those anticipated because of confounding) were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables X Program Role Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables X Racial/Ethnic Background Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables
X Program Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables
X Family Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables
X Homemaker Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Aide Working Style Variables
X Aide Working Style Variables

No consistent relationships (beyond those anticipated because of confounding) were observed in the combined, food stamp, or non-food stamp groups.

Homemaker Variables X
Program Role Variables

No consistent relationships were observed in the combined, food stamp, or non-food stamp groups.

Homemaker Variables X Racial/
Ethnic Background Variables

For the combined group, weak positive relationships were observed between the percentage of homemakers with less than an eighth grade education and the percentage of Spanish-surname homemakers (September 1977 $r = 0.309$; March 1978 $r = 0.352$), Aides (September 1977 $r = 0.326$; March 1978 $r = 0.349$), Volunteers (September 1977 $r = 0.378$; March 1978 $r = 0.405$), and youth (September 1977 $r = 0.343$; March 1978 $r = 0.313$). Though not overly strong relationships, they would seem to indicate relatively low education levels in units with a high proportion of Spanish-surname participants and staff.

Homemaker Variables X
Program Variables

There is a consistent weak-to-moderate relationship between average unit Program family size and the percentage of homemakers in the 25-55 year-old

age group. The relationships exist for the combined group (September 1977 $r = 0.462$; March 1978 $r = 0.536$), the food stamp group (September 1977 $r = 0.333$; March 1978 $r = 0.480$), and the non-food stamp group (September 1977 $r = 0.363$; March 1978 $r = 0.430$). For the non-food stamp only, there is also a moderate negative relationship between the percentage of homemakers older than 55 and average family size (September 1977 $r = -0.421$; March 1978 $r = -0.497$).

The relationships with the middle age category of homemakers are probably due to the larger families of women in this age group. Younger homemakers have not yet had an opportunity to build their families to their ultimate size, while the children of older homemakers may have already left home. Older homemakers who are living alone may not be eligible for food stamps; this could explain the pattern of correlations in units with a high percentage of older homemakers.

Homemaker Variables X Family Variables

For units in the combined group, a weak negative correlation existed between the percentage of homemakers under 24 years old and children in school as a percentage of children under 19 (September 1977 $r = -0.373$; March 1978 $r = -0.373$). This consistent relationship did not hold for the food stamp and non-food stamp groups.

Stronger relationships existed between the percentage of homemakers in the 25-55 year-old age group and:

- ✓ Percentage of Program family members under 19. This relationship existed in the combined group (September 1977 $r = 0.615$; March 1978 $r = 0.618$), the food stamp group (September 1977 $r = 0.458$; March 1978 $r = 0.521$), and the non-food stamp group (September 1977 $r = 0.499$; March 1978 $r = 0.494$).
- ✓ Total children in school as a percentage of Program family members. Again, this relationship held for the combined group (September 1977 $r = 0.514$; March 1978 $r = 0.650$), the food stamp group (September 1977 $r = 0.329$; March 1978 $r = 0.444$), and the non-food stamp group (September 1977 $r = 0.479$; March 1978 $r = 0.522$).
- ✓ Percentage of children in school lunch programs. This relationship exists for the combined group (September 1977 $r = 0.384$; March 1978 $r = 0.352$), and the food stamp group (September 1977 $r = 0.311$; March 1978 $r = 0.455$). There was no consistent relationship in the non-food stamp group.

For the combined group, a generally moderate relationship exists between the percentage of homemakers over 55 and the percentage of children under 19 (September 1977 $r = -0.544$; March 1978 $r = -0.550$). This consistency of relationship held for the food stamp group (September 1977 $r = -0.403$; March 1978 $r = -0.436$), and for the non-food stamp group (September 1977 $r = -0.544$; March 1978 $r = -0.586$).

Again, the reason for this pattern of relationships appears to be the greater family size of homemakers in the middle age category.

Homemaker Variables X Homemaker Variables

Weak-to-moderate relationships exist between the percentage of homemakers with less than an eighth grade education and two categories of homemaker age:

- ✓ There is a generally weak negative relationship with the percentage of homemakers under 25. This relationship holds for the combined group (September 1977 $r = -0.373$; March 1978 $r = -0.370$) and the food stamp group (September 1977 $r = -0.376$; March 1978 $r = -0.440$). No such relationship exists in the non-food stamp group.
- ✓ There is a weak-to-moderate positive relationship with the percentage of homemakers over 55. This relationship exists in the combined group (September 1977 $r = 0.425$; March 1978 $r = 0.377$), the food stamp group (September 1977 $r = 0.479$; March 1978 $r = 0.485$), and the non-food stamp group (September 1977 $r = 0.421$; March 1978 $r = 0.350$).

These relationships probably result from the increasingly stringent compulsory education statutes of recent decades; older homemakers have not been exposed to them during their younger years.

Family Variables X Program Role Variables

Weak positive relationships exist between the percentage of families residing in urban areas and Program families at the beginning of the reporting period (September 1977 $r = 0.403$; March 1978 $r = 0.329$), Program families dropped during the reporting period (September 1977 $r = 0.402$; March 1978 $r = 0.326$), and Program families at the end of the reporting period (September 1977 $r = 0.439$; March 1978 $r = 0.372$). From these data, it would appear that larger Program units tend to be located in urban areas.

Family Variables X Racial/ Ethnic Background Variables

Units with a high percentage of family members in school have a slight tendency to have a lower proportion of white homemakers (September 1977 $r = -0.344$; March 1978 $r = -0.377$).

There are several existing weak negative relationships between the percentage of children in school lunch programs and:

- ✓ Percentage of white homemakers (September 1977 $r = -0.339$; March 1978 $r = -0.369$).

✓ Percentage of white Volunteers (September 1977 $r = -0.307$; March 1978 $r = -0.391$).

✓ Percentage of white youth (September 1977 $r = -0.311$; March 1978 $r = -0.386$).

Additionally, there is a weak positive relationship between this variable and the percentage of black homemakers (September 1977 $r = 0.312$; March 1978 $r = 0.307$).

In sum, these data indicate a tendency for white homemakers to have a relatively low number of children.

Family Variables X Program Variables

Positive relationships exist between average family size and:

✓ Children under 19 as a percentage of total family members. This relationship holds for the combined group (September 1977 $r = 0.880$; March 1978 $r = 0.903$), the food stamp group (September 1977 $r = 0.860$; March 1978 $r = 0.877$), and the non-food stamp group (September 1977 $r = 0.832$; March 1978 $r = 0.884$).

✓ Children in school lunch as a percentage of total persons in families. These relationships hold only for the combined group (September 1977 $r = 0.327$; March 1978 $r = 0.358$).

Since all of these variables are, to an extent, indicators of family size, the positive relationships are not surprising.

Weak positive relationships exist between the percentage of families residing in urban areas and:

✓ Number of Program families. This relationship exists for the combined group (September 1977 $r = 0.370$; March 1978 $r = 0.335$), and the food stamp group (September 1977 $r = 0.357$; March 1978 $r = 0.321$), but not for the non-food stamp group.

✓ Total number of persons in Program families. This relationship exists only in the combined group.

These data again indicate that larger units tend to be located in urban areas.

Family Variables X Family Variables

A moderate positive relationship exists between the percentage of families receiving welfare and the percentage receiving food stamps (September 1977 $r = 0.584$; March 1978 $r = 0.534$). This result is available only for the combined group, of course. The data indicate that families receiving food assistance also tend to receive financial assistance in the form of

welfare. Again, this result is neither surprising nor particularly useful from an EFNEP planning standpoint.

Program Variables X Program Role Variables

Both of these classes of variables include indexes of the size of the unit. All relationships observed were expected; none contain any useful implications for EFNEP operations.

Program Variables X Racial/ Ethnic Background Variables

A number of relationships in this category indicate that units with a high percentage of white homemakers tend to be associated with smaller units (September 1977 r 's are between -0.31 and -0.38; March 1978 correlations are between -0.32 and -0.38). Confounded data indicate that units with a high percentage of black homemakers tend slightly to be associated with larger units (September 1977 correlations are between 0.30 and 0.36; March 1978 correlations are between 0.31 and 0.36).

Program Variables X Program Variables

No consistent correlations were found in the combined, food stamp, or non-food stamp groups.

Racial/Ethnic Background Variables X Program Role Variables

A variety of relationships shows a relatively weak negative relationship between percentage of white participants and staff and size of the unit (September 1977 r 's are between -0.31 and -0.38; March 1978 are between -0.34 and -0.41). A similar, but reversed, relationship exists between unit size and the percentage of Spanish-surname homemakers (September 1977 $r = 0.309$; March 1978 $r = 0.446$). These data indicate that units with a large percentage of white homemakers tend to be smaller units (and vice versa), while the situation is reversed in the case of Spanish-surname homemakers.

Racial/Ethnic Background Variables X Racial/Ethnic Background Variables

The relationships in this category merely reflect the high degree of interrelationship among percentages of staff and participants in various ethnic categories. For white, black, and Spanish-surname groups these interrelationships are quite high and stable: for September 1977 they range between 0.89 and 0.96; for March 1978, they vary between 0.89 and 0.98. For American Indians the correlations drop somewhat, but still are in the range of 0.75 to 0.94. Other racial/ethnic groups are too small to make meaningful comparisons.

These data suggest that staff and participant levels are quite homogeneous with respect to racial and ethnic categories.

Program Role Variables X Program Role Variables

No consistent correlations (other than those which are confounded or are measuring the same general factor) were found.

Conclusions and Recommendations Relating to Correlation Analyses

Important conclusions to be derived from the results of the correlation analyses occur in two areas:

- ✓ Utility of EFNEP Reporting System information for correlation studies.
- ✓ Relationship of correlation study results to EFNEP goals and objectives.

These areas are discussed in more detail below.

Utility of EFNEP Reporting System Information for Correlation Studies

It appears from the foregoing presentation of study results that product-moment correlation analysis of EFNEP Reporting System information yields little in the way of useful guidance for EFNEP management. This statement is almost certainly true for the critical issues of Program targeting (selection of sub-populations most in need of EFNEP services) and enhancement of EFNEP effectiveness in altering food behaviors. The lack of consistent patterns of associations in these two areas indicates that the EFNEP participant population is quite homogeneous with respect to both initial levels of and improvements in food consumption. It is important to note, however, that these data are based on unit data, and may not reflect the relationships which might become apparent if individual participants could be tracked through EFNEP.

Relationship of Correlation Study Results to EFNEP Objectives

One of the most interesting aspects of the correlation study results is the absence of demonstrated relationships in a number of areas. These include the lack of indications of different effectiveness in improving the diets of participants defined by:

- ✓ Racial/ethnic categories.

✓ Unit size.

✓ Family characteristics (size, number of children, participation in assistance programs, geographic location).

✓ Income levels.

✓ Type of session.

Interpreted in the light of the measured overall positive impact of EFNEP diets, these results may indicate that EFNEP effectively accommodates to the different needs of such subgroups, thus maintaining the diet improvement with all types of homemakers by focus on idiosyncratic family requirements. There is nothing in the results of the analyses, at any rate, which would argue against such a conclusion.

Overall, there are no findings from the correlation studies which indicate a need for significant changes in EFNEP operations.

TREND ANALYSES

Methodology in Trend Analyses

Important variables were extracted from EFNEP printouts, placed into data tables, and plotted. The resulting time series data were subjected to linear regression analysis to determine presence, rate, and stability of trend. Tests for curvilinearity were not applied because of the relatively limited number of observations; where significant nonlinearities were evident in the time plots, they are noted in discussions of particular variables. For food stamp and non-food stamp subgroups, only three observations are available; regression analysis was therefore not performed on these data. Differences between these subgroups are measured by calculating the difference between their respective three-period averages.

Results of Trend Analyses

The following discussions present key trend and status findings. Charts of trend analyses are presented in Appendix A: EFNEP Trend Charts, and are arranged in the same order of presentation as the discussions. Observations and regression results for the combined groups are presented in Appendix B: Combined Group EFNEP Data; data for the food stamp and non-food stamp subgroups are presented in Appendix C: Food Stamp and Non-Food Stamp Data.

Food Behavior of Program Homemakers

Homemakers with minimum diets at Program entry and after 24 months participation. This category bears on two important aspects of EFNEP operations: (1) locating and enrolling participants who are nutritionally in need and (2) influencing the food behaviors of participants. The percentage of Program homemakers reporting at least one serving from each food group at Program entry (Figure 2) has been about 50 percent throughout EFNEP's history. This percentage has, however, been declining slowly (and somewhat irregularly) at a rate of about 0.4 percentage points per year. This trend indicates that EFNEP is maintaining its capability for locating Program participants who are nutritionally in need; the figures indicate a modest improvement in recent reporting periods. The percentages at the 24-month point (Figure 3) are also somewhat variable, and no significant trend exists. It therefore appears that a relatively constant percentage of EFNEP participants have had a minimum diet after 24 months of Program participation. The average for the 14 reporting periods for which data are available is about 77 percent.

EFNEP participants in the food stamp group have scores slightly lower than the non-food stamp group at Program entry (51 percent versus 54 percent respective averages for the past three reporting periods). This situation reversed itself after 24 months of participation, with the food stamp group scoring slightly higher (at 77.8 percent average) than the non-food stamp group (76.1 percent average). Scores for these subgroups are not substantially different; we would not ascribe any significance to the small differences shown here.

Homemakers with adequate diets at Program entry and after 24 months participation. These figures also indicate EFNEP success in locating homemakers who are in nutritional need and in altering homemaker food consumption habits. The percentage of homemakers with adequate diets at Program entry (Figure 4) has averaged 7.4 percent, and has been dropping at a rate of just under 0.5 percentage points per year; the trend is a moderately strong one. This indicates that EFNEP is finding and enrolling homemakers who are increasingly in need of better nutrition. After 24 months of participation in EFNEP, the percentage of homemakers with completely adequate diets has averaged about 23 percent (Figure 5); there is no strong trend in these data. Examined in the light of the declining Program entry percentages, however, they indicate increased effectiveness in positively affecting homemaker diets.

A somewhat lower percentage of food stamp recipients have adequate diets at Program entry (4.7 percent average) than do homemakers who do not participate in the food stamp program (5.7 percent average). After 24 months of Program participation, there is essentially no difference between the two groups (both average about 22 percent). The trend in both groups is downward.

Percentage of Program Homemakers Reporting No Servings in Individual Food Groups at Program Entry and After 24 Months of Program Participation

There is a moderate upward trend in the percentage of Program homemakers reporting no servings of milk at Program entry (Figure 6); the rate of increase has been about 0.5 percentage points per year. In the vegetable and fruits group, there is a slight (and irregular) upward trend at a rate of about 0.2 percentage points per year (Figure 8). No definite trend was noted for the meat (Figure 7) or breads and cereals (Figure 9) food groups.

For figures after 24 months of participation, there are moderate downward trends in the meat (Figure 11) and vegetables and fruits (Figure 12) groups. No such trends were noted in the milk (Figure 10) and breads and cereals (Figure 13) groups.

In general, data for the food stamp and non-food stamp groups followed the pattern of the combined group. Food stamp recipients tended to repeat a higher percentage of no servings of vegetables and fruits. Differences in the other food groups were not meaningfully different.

Percentage of Program Homemakers Reporting Adequate Servings in Individual Food Groups at Program Entry and After 24 Months of Program Participation

For scores at Program entry, there has been a fairly consistent decline in the percentage of homemakers reporting adequate servings of milk (Figure 14). This indicates a general decline in adequacy of milk servings for the homemakers entering the Program. A less dramatic decline also exists in the meat group (Figure 15). No trend is evident for the vegetables and fruits group (Figure 16), but the entry scores for the breads and cereals groups have been generally rising (Figure 17). No meaningful consistent differences between food stamp and non-food stamp participants exist except for the vegetables and fruits group, where the food stamp group tends to show a lower percentage of adequate servings (average of 15.3) than the non-food stamp group (average of 20.3).

After 24 months of Program participation, percentages in the milk group show a moderately strong downward trend (Figure 18), while those in the fruits and vegetables (Figure 20) and bread and cereal (Figure 21) groups show moderate upward trends. The percentage of homemakers reporting adequate milk servings have been dropping at a rate of about 1 percentage point per year, while the increases in the "fruits and vegetables" and "breads and cereals" groups have averaged 0.6 and 0.7 percentage points per year, respectively. Measures for the food stamp and non-food stamp groups are not substantially different, except that the percentages for the vegetable and fruit group are slightly higher for the non-food stamp group (average of 45.5 percent) than for the food stamp group (average of 40.1 percent).

Percent Differences Between Entry Scores and Scores After 24 Months of Participation; Percentage of Homemakers with Minimum Diets

It is natural to question whether EFNEP is getting better or worse in improving the diets of its participants. These data indicate that the Program has maintained its level of performance in this measure; the average difference has been about 42 percent in the 14 reporting periods for which information is available. There has been no appreciable trend in the measures (Figure 22).

Percentage differences in the food stamp group (52 percent average) are higher than those for the non-food stamp group (42 percent).

Percent Differences Between Entry Scores and Scores After 24 Months of Participation; Percentage of Homemakers with Adequate Diets

Again, the measure addresses the extent to which EFNEP is getting better or worse in improving the diets of its homemakers. The figures here show that the percent difference between scores at Program entry and those after 24 months of Program participation has been increasing. This indicates that EFNEP is doing a better job of positively affecting the diets

of its participating homemakers. The average percentage difference for the 14 reporting periods for which data are available has been about 250 percent. There has been a relatively strong upward trend in the figures averaging about 27 percentage points per year (Figure 23).

Percentage differences in the food stamp group (390 percent average) are higher than the analogous differences in the non-food stamp group (300 percent average).

Percent Differences Between Entry Scores
and Scores After 24 Months of Participation;
Percentage of Homemakers Reporting No Servings
in Individual Food Groups

In the combined dataset, moderate upward trends were noted for the meat food group (Figure 25) and the fruits and vegetable food group (Figure 26). These data may indicate that EFNEP is becoming increasingly effective in reducing the percentage of homemakers reporting no servings in these food groups. It should be noted, however, that the groups of homemakers at the Program entry and 24 month points contain different individuals; these data are not derived from "tracking" a given group of homemakers through the Program. No definitive trends were noted in the milk (Figure 24) or breads and cereals (Figure 27) food groups.

No striking differences between the food stamp and non-food stamp subgroups were noted, nor were there stable trend patterns in these subgroups.

Percent Differences Between Entry Scores
and Scores After 24 Months of Participation;
Percentage of Homemakers Reporting Adequate
Servings in Individual Food Groups

Moderate-to-strong positive trends were noted in all food groups (Figures 28 through 31). Again, this may indicate increasing effectiveness on the part of EFNEP in inducing homemakers to provide adequate servings in all food groups. In all cases, the average servings for the food stamp group are greater than those for the non-food stamp group.

Number of Active Program Families

The number of Program families peaked in March 1972, at about 360,000 families. Since that time the number of families has dropped fairly steadily to just over 210,000 in September 1977 (see Figure 32). Figures for the early reporting periods (March 1969 through March 1972) are typical of a young and growing program, with participation levels increasing as hiring and training of staff is completed. The drop in participation levels since March 1972 results from the relatively constant level of funding for EFNEP since 1971. In an inflationary period, the number of Program families which can be supported by EFNEP per dollar available naturally declines. Thus, the drop in the number of Program families is not surprising. The decline is expected to continue until or unless: increased funds become

available; there is a significant change in EFNEP activity patterns (e.g., shorter period of participation for Program families; increased emphasis on group meetings); or the inflation rate drops drastically.

Family Size

In line with the concentration on families with young children and the need to benefit as many people as possible, EFNEP should focus its efforts on large families. The average size of EFNEP families has, however, been dropping fairly steadily since March 1970 (Figure 33). The overall trend since March 1969 has been downward at a rate of about 0.1 persons per Program family per year. The reasons for the decline are numerous, but the major one is probably the overall decline in mean family size for the United States as a whole. Two emphases of EFNEP have probably also contributed to the decline: (1) a focus on younger homemakers who have not yet had an opportunity to build families to their ultimate size and (2) a concentration on one-parent households.

The families of food stamp recipients are substantially larger (4.4 person average) than those of non-food stamp recipients (3.8 person average). In both of these groups, the downward trend in family size is evident.

Cumulative Number of Program Families

This chart illustrates the number of Program families who have ever been enrolled in EFNEP at the end of each reporting period (see Figure 34). Naturally, the number of families increases steadily. By September 1977, almost 1.6 million families had been or were currently enrolled in EFNEP. The rate of increase over the 18 reporting periods has been about 175,000 families per year.

Number of Non-Program Families

Non-Program families are those which have been contacted by EFNEP with the intent to enroll the families in the Program. The number of non-Program families roughly parallels the number of Program families. The peak occurred in March 1972 at about 140,000 families. Since then, the number of non-Program families has dropped at a rate somewhat faster than that for Program families (Figure 35). Since October 1976 specific efforts have been made by States to assure that contacts with non-Program families are made with the intent to enroll those families. The drop to about 50,000 families in September 1977 may be substantially due to these efforts.

Family Income

Since the purpose of EFNEP is to provide education to low-income families, one of the most important indicators of Program targeting is the average income of families enrolled in EFNEP. The average monthly income of families entering EFNEP has been increasing steadily since the beginning

of the Program (Figure 36). This trend has been quite strong, and has averaged about \$13.40 per year since March 1969. In that interval, average monthly income has increased from \$217 per month to \$352 per month. In times of inflation, however, then-current dollars do not provide a suitable index of the real purchasing power of a given income. It is therefore expedient to calculate average family income in constant (1957-1959) dollars. Measured in this manner, average family income has actually been dropping slowly (Figure 37). The rate of decline in constant dollars has been about \$3.00 per year, and the downward trend is quite strong. These data indicate that EFNEP continues to find poorer and poorer families, thus focusing on people likely to be in increasingly urgent need of nutrition education. It should be noted, however, that these income data do not include nondollar income such as food stamps and donated foods.

Food stamp recipients had average family incomes (average of \$283) substantially lower than those of families not participating in food stamp programs (average of \$390). This situation also holds for constant-dollar incomes. The average for the food stamp group is \$132, while that for the non-food stamp group is about \$183. It is interesting to note that for the last three months the constant-dollar income for food stamp recipients has been dropping, while the average for the non-food stamp group has risen over the same period.

Family Food Expenditures

Like family income, family food expenditures as measured in then-current dollars have increased relatively steadily throughout the life of the Program (Figure 38). The rate of increase over the 18 reporting periods has been about \$5.00 per year, and the upward trend has been strong. As with income, this increase is wholly due to the inflation which has occurred throughout the history of EFNEP. Measured in constant dollars, the average family food expenditures have actually been dropping slowly at a rate of about \$0.79 per year (Figure 39). The downward trend has been moderately strong.

As expected, the food expenditures for the food stamp group are lower (current-dollar expenditures average \$100; constant-dollar expenditures average \$47) than those for the non-food stamp group (current-dollar expenditures average \$136; constant-dollar expenditures average \$63). There is no consistent trend for these groups.

Participation in Food Programs

One of the subobjectives of EFNEP is to help families manage their resources related to food, including food stamps and food distribution programs. Families are taught how to utilize and buy the most nutritious diet. All Program families are told of the availability of food stamp and distribution programs, and are referred to the offices of those programs for which they may be eligible. From March 1969 through December 1975 the percentage of families receiving food stamps rose steadily, leveling off at that point at about 50 percent (Figure 40). For donated foods, the percentage fluctuated irregularly between 18 percent and 23 percent from March

1969 through June 1973 (Figure 41). The measures then dropped rapidly to the current level of under 1 percent. The sharp drop in food distribution program participation has been due to the conversion of the program to food stamps. Currently, the food distribution donated foods programs operate mainly on Indian reservations.

Family Members Under 19 Years of Age

EFNEP guidelines specify a concentration on homemakers with young children and families with a high proportion of children and youth. The percentage of Program family members under 19 years of age has been quite variable, but the average for the 16 reporting periods has been about 60.7 percent (Figure 42). It is possible that the drop after March 1972 results from variability associated with sampling initiated in mid-1972.

The food stamp group average (61.2 percent) is somewhat higher than that for the non-food stamp group (50.6 percent average). There is no particular trend in either set.

Participation in School Lunch Programs

The percentage of Program family school age children has been climbing relatively steadily since March 1969 (Figure 43). The upward trend is a highly stable one ($R^2 = .840$); the rate of increase has been about 2.9 percentage points per year. It is likely that this finding represents the increasing availability of school lunch programs in the nation as a whole as well as the results of EFNEP efforts to work with families with school age children.

There was a higher average percentage of school lunch participants in the food stamp group (91.5 percent) than in the non-food stamp group (82.3 percent). This situation is consistent with the general tendency of food stamp recipients to participate more heavily in food assistance programs.

Percent of Program Family Children in School

This measure has remained relatively constant at about 67 percent since March 1970 (Figure 44). No strong trend is observable. For the food stamp group, the average is somewhat higher (69.6) than for the non-food stamp group (66.6). Percentages in both of these groups have been dropping over the last three reporting periods, but there are too few data points to determine whether this pattern represents a significant trend.

Family Residence

The percentage of Program families residing in urban areas rose relatively steadily through December 1975 (Figure 45). Since then, the percentage has dropped to just under 58 percent in March 1978. The average

percentage of urban residence for the 18 reporting periods is about 61 percent. Overall, there has been a weak upward trend average about 0.5 percentage points per year. The reason for the drop in the last four reporting periods is not clear, since the emphasis in EFNEP has been on working with urban families.

The average for the food stamp group (61.3 percent) is slightly higher than that for the non-food stamp group (56.6 percent). The percentages for the non-food stamp group have consistently gone down for the last three reporting periods. This stability does not exist in the food stamp group.

Family Participation Style

Program families participate in EFNEP in three ways: individually, in group sessions, or both individually and in groups. The percentage of families involved in individual sessions only has risen fairly steadily in the 11 reporting periods since December 1972, with the rate of increase being about 2.7 percentage points per year (Figure 46). Over the same period, the percentage of homemakers working in both individual and group sessions has been dropping at a rate of about 1 percentage point per year (Figure 48). Both trends are quite strong. The percentage of homemakers in group sessions alone has been variable, but has evidenced no significant trend (Figure 47). The figures do not total to 100 percent because not all Program families are involved in working sessions in a given month. These data indicate that individual sessions are increasingly the most prevalent.

An average of 72.3 percent of food stamp participants participated in individual sessions, 8.4 percent in group meetings, and 4.2 percent in both types of sessions. The comparable figures for the non-food stamp group are 66.4 percent, 13.2 percent, and 4.6 percent. The average total percentage of families worked with is then 84.9 percent for the food stamp group and 84.0 percent for the non-food stamp group. For both subgroups the percentage of homemakers involved in individual sessions has consistently increased; no such stable pattern exists for group and combined sessions.

Program Family Welfare Reciprocity

The encouragement of participation in available welfare assistance is not a direct objective of EFNEP, but efforts are made to inform families of the economic and community benefits available to them. Until December 1973 the percentage of Program families receiving welfare assistance increased, if somewhat irregularly (Figure 49). Since that time, the percentage has been dropping, again somewhat irregularly. Over the 18 reporting periods there has been no strong trend.

The percentage of food stamp families receiving welfare assistance (60.0 percent average) is dramatically higher than that for the non-food stamp group (9.7 percent average). It is therefore apparent that food and financial assistance program participation tend to go together. The percentage of families residing in urban areas in the non-food stamp group has been dropping over the last three reporting periods. No such stable sequence exists in the food stamp group.

Homemaker Age

EFNEP has been charged with concentrating its efforts on families with young children. Since younger mothers are more likely to have younger children than older mothers, the age of Program homemakers may indicate the age of their children. Since December 1972 the percentage of homemakers less than 24 years of age has averaged about 18.5 percent and has risen steadily at a rate of about 1.3 percentage points per year (Figure 50). In the same period, the percentage of homemakers between 24 and 55 years of age has remained relatively constant at about 62.5 percent (Figure 51). The percentage of Program homemakers 56 years of age or older has averaged about 15.5 percent over the last 11 reporting periods (Figure 52), but these measures have been dropping steadily. This information indicates that EFNEP is successfully reaching and working with increasingly younger homemakers. In so doing, the chances of positively effecting changes in the diets of young families (who are in most need of adequate nutrition) have been enhanced.

For the food stamp group, an average of 21.2 percent of homemakers are under 24 years of age, 65.4 percent are between 25 and 55 years of age, and 13.3 percent are 56 years old or older. The comparable averages for the non-food stamp group are 22.0 percent, 58.7 percent, 19.1 percent. It thus appears that homemakers in the non-food stamp group are on the average somewhat older than those in the food stamp group. In all cases, the percentage of young homemakers is steadily rising, while the percentage of homemakers 56 or older has consistently dropped.

Homemaker Education

One of the characteristics of low-income families is generally a low level of formal education. Figure 53 indicates that from December 1972 on the percentage of Program homemakers with less than an eighth grade education has been dropping at a rate of about 2 percentage points per year (Figure 53). The figures prior to December 1972 do not appear to be comparable to later information; for this reason, data prior to December 1972 have not been included in either trend charts or data tables. It should be noted that the EFNEP commitment to work with younger homemakers may be at least partly responsible for the drop in the percentage of low-education participants. Younger homemakers are undoubtedly more likely than older homemakers to have higher educational attainment, since compulsory education statutes have been more rigorously enforced in recent decades. The more recent data (December 1972 and later) indicate, however, that the Program is continuing to locate homemakers with relatively low levels of formal education. From December 1972 through March 1978, the percentage of homemakers with low education levels has averaged just over 45 percent. In 1974, only 24.3 percent of the U. S. population (over 14 years of age) as a whole had attained less than an eighth grade education.

An average of about 45 percent of food stamp recipients had less than an eighth grade education, the comparable figure for the non-food stamp group is about 36 percent. The percentage in the non-food stamp group has dropped steadily over the last three reporting periods; this stability of trend does not appear in the food stamp group.

Percentage of Program Homemakers in Various Racial/Ethnic Categories

The percentage of white homemakers has risen steadily since March 1969 at a rate of about 0.8 percentage points per year (Figure 54). This upward trend has been accompanied by a corresponding downward trend in the percentage of black homemakers at a rate of about 0.70 percent per year (Figure 55). Other racial/ethnic categories (Figures 56 through 59) have been either stable or too variable to show pronounced trends. The predominance of black and Spanish-surname families indicates a strong focus on what have traditionally been the most disadvantaged components of American society.

Percentage of Aides Relative to Percentage of Homemakers in Racial/Ethnic Categories

Throughout the history of EFNEP, white Aides have been relatively over-represented (Figure 60). The ratio values consistently over 1.00 indicate that there are more white Aides in EFNEP than would be expected on the basis of the number of white homemakers. There is no overall linear trend, but it is clear that the overrepresentation has been dropping since September 1970. This pattern of value may indicate an EFNEP response to the greater proportion of white Aides. The situation for blacks (Figure 61) and Spanish-surname Aide/homemaker (Figure 62) ratios is the reverse of that described above; here, Aides tend to be somewhat underrepresented when compared to the relative numbers of homemakers in these racial/ethnic categories. There is no strong linear trend for either of these groups. The data for American Indian (Figure 63), Oriental (Figure 64), and "other" (Figure 65) Aide/homemaker ratios are based on quite low incidence levels; they are too variable to show trends, and even relative representation is difficult to assess meaningfully.

It should be noted that these data do not definitely indicate that EFNEP is failing to recruit Aides from indigenous populations as defined by racial/ethnic categories. Consistent inequalities in the number of families per Aide in units where there are large differences in the percentage of families in different racial/ethnic categories could, for example, affect the Aide/homemaker ratios in the manner reflected here.

Program Family FHA Assistance Reciprocity

No consistent trend in FHA participation appears here (Figure 66). The average percentage participation has been about 2.9 percent since December 1972. A somewhat higher percentage of food stamp recipients receive FHA assistance (an average of 3.6 percent) than non-food stamp participants (an average of 2.8 percent). This finding is consistent with the overall higher average participation of food stamp recipients in assistance programs of all sorts.

EFNEP Aides

After the initial growth of EFNEP, the number of paraprofessional Program Aides has dropped from a peak of just over 9,000 in March 1971 to slightly under 6,000 in September 1977 (Figure 67). The reasons for the decline in the number of Aides is, of course, the constant dollar funding of EFNEP and inflation. The number of full-time equivalent (FTE) Aides follows the same pattern (Figure 68). The number of FTE Aides is calculated by evaluating the number of Aides who would have been employed by EFNEP if all Aides worked a full 40-hour week.

Racial/Ethnic Background of Aides

The percentage of white Aides increased sharply, if somewhat erratically, from March 1969 through March 1971 (Figure 69). Since then, the figures have remained relatively constant at between 46 percent and 48 percent. The situation is similar but reversed for black Aides--there was a sharp drop between March 1969 and March 1971, followed by a leveling off at between 38 percent and 41 percent (Figure 70). Other racial/ethnic categories either show no consistent trend or are comprised of too few Aides to permit valid analysis (Figures 71 through 74). It is likely that the initial changes in the racial/ethnic composition of EFNEP Aides were associated with the youth and rapid expansion characteristic of the Program at the time. As EFNEP matured, the mix of Aides attained stability.

Program Families per FTE Aides

One good measure of the efficiency of the adult component of EFNEP is the number of Program families per FTE Aide. The higher the number, the greater the number of families with which the average Aide works. This index of Program efficiency rose steadily through June 1974, and then remained relatively constant until September 1977, at which time it dropped to just over 45 (Figure 75). This value is about 5 percent lower than the average for the previous 15 reporting periods. The effect of the change in reporting months is unknown, although there is little evidence of a seasonal cycle prior to September 1977. It should be noted, however, that changes to EFNEP guidelines in 1977 permitted funds formerly used only to employ professionals to work with youth to be used to employ both professionals and paraprofessionals. It may be that Aides are spending more time working with youth, and therefore have less time to work with Program families.

Aide Visits per Program Family

All other things held constant, the number of Aide visits per Program family will be an index of the proportion of time Aides spend working directly with Program families. The higher the number, the more efficient the average Aide in terms of overall work with Program families. Since March 1969 Aides have averaged about 0.95 visits per Program family per month (Figure 76). This index has been increasing at a rate of about 0.04 visits per Program family per month. It appears, then, that EFNEP Aides have been steadily increasing their efficiency in making working visits to

Program families. Since some Program families may be visited more than once a month, it is impossible to conclude from these data that all enrolled families are visited at least once monthly. On the average, however, each participating family was visited slightly more than once a month.

Youth Participation

The total number of youth participating in the 4-H youth component of EFNEP has averaged about 180,000 for the past 14 reporting periods. The total number of youth rose relatively steadily from March 1970 through March 1972 (Figure 77). Since this latter date the number of youth remained relatively stable until September 1972, when it dropped significantly. The change in the reporting periods (from the June-December periods to the March-September periods) which occurred after June 1976 may have had some effect on the observed levels of participation. On average, about 75,000 youth from Program families were participating at the end of each reporting period (Figure 78); the comparable figure for youth from non-Program families is about 105,000 (Figure 79). Neither category of youth has exhibited strong trends. From December 1972 through June 1976, there was a definite cyclical pattern in both total youth and youth from Program families: the numbers in the June reporting periods were substantially higher than those for the December reporting periods. This situation is probably explainable in terms of: the greater likelihood of bad weather during the winter months; greater opportunity for attractive EFNEP activities for youth during the summer months; and the competition from Christmas activities during December.

Cumulative Youth Participation

Figure 80 indicates the number of 4-H youth who have ever been enrolled in EFNEP since June 1972 at the end of each reporting period. Naturally, the number of youth increase steadily. By September 1977 almost 3.5 million youth had participated in the youth component of EFNEP.

Youth per Program Family

The number of youth per Program family shows a moderately strong upward trend (Figure 83). There are indications of a cyclical pattern, with higher values occurring in the June reporting periods. The upward trend indicates a relative increase in the emphases on the 4-H youth component of EFNEP since March 1970.

Ratio of Youth from Program Families to Youth from Non-Program Families

After an initial concentration on youth from Program families, the emphases has shifted to non-Program families (Figure 84). As of September 1977, about twice as many youth were from non-Program families as from Program families.

Age of Female Youth

The proportion of female EFNEP 4-H youth under 9 years of age has been growing fairly steadily between December 1972 and March 1978 (Figure 85); the rate of increase has been about 0.74 percentage points per year. During the same time period, the percentage of female youth older than 14 has been dropping at about 0.78 percentage points per year (Figure 87). The percentage of female youth in the 9-13 year age range has varied between 55 and 62 percent, but there is no strong trend in these data (Figure 86).

Age of Male Youth

The proportion of male EFNEP 4-H youth under 9 years of age has been somewhat variable, but has been increasing over the December 1972-March 1978 time period at a rate of about 0.62 percentage points per year (Figure 88). At the same time, the percentage of male youth over 14 years of age has dropped at about 0.66 percentage points per year (Figure 90). Over the past 7 reporting periods, the percentage of male youth in this age category has changed little. There has been no consistent trend in the percentage of male youth in the 9-13 year age range; the data in this category peaked between June 1974 and June 1976 and have dropped steadily since then (Figure 89). In comparing the age distributions for male and female youth, it is evident that males are somewhat younger than females. This is probably explainable in terms of socially encouraged roles for young men and women.

Racial/Ethnic Background of Youth

The racial/ethnic composition of participants in the 4-H youth component of EFNEP has changed markedly during the life of the Program. The percentage of white youth has been rising at a rate of about 1.4 percentage points per year between December 1972 and September 1977 (Figure 91). During this time the percentages of black (Figure 92) and Spanish-surname (Figure 93) youth dropped at a rate of about 0.34 and 0.74 percentage points per year, respectively. Other racial/ethnic categories (Figures 94, 95, and 96) of youth are small in number, and so subject to rapid percentage changes that trends are difficult to discern. The Program remains strongly minority-oriented, with almost 50 percent of its participants being in nonwhite categories.

Volunteers

Neither the number of Volunteers working only with adults (Figure 98) nor the number working only with youth (Figure 99) have shown strong and consistent trends. Volunteers working with adults only averaged just over 3,750 (at the end of the reporting period) from December 1972 through June 1976. The level dropped only slightly (to about 3,700) in September 1977. Volunteers working only with youth averaged just under 14,000 from December 1972 through June 1976, but this figure dropped about 30 percent (to just over 9,500) in September 1977. The number of Volunteers working with both youth and adults underwent a relatively slow and steady decline from December 1972 through June 1976, then dropped to under 1,700 (from an average of about

2,400 for the previous 8 reporting periods) (Figure 100). The total number of Volunteers shows no strong upward or downward trend, but the 15,000 Volunteers active at the end of September 1977 is about 26 percent less than the average of over 20,000 for the previous 8 reporting periods (Figure 97). It is apparent that Volunteers in EFNEP are becoming more specialized, tending to work more and more with either adults or youth, but not both. The majority of Volunteers have, of course, worked exclusively with youth--between about 64 percent and 73 percent for the past 9 reporting periods. Interestingly, the number of Volunteers working with youth shows the same cyclical pattern as was in evidence for the number of youth. There are substantially more Volunteers working with youth at the end of June reporting periods than at the end of December reporting periods. It is likely that the reductions in some categories of Volunteers in September 1977 are due at least in part to the reopening of schools across most of the country. It is also true, however, that the declining real dollars available to EFNEP must have an effect on the level of Volunteer operations the Program can effectively support.

Volunteer per Program Family

The number of Volunteers per program family shows a distinct cyclical pattern, with a greater proportion of Volunteers working during the December reporting period (Figure 101). There is a moderate upward trend in the measures; this trend would be stronger except for the variability due to the cyclical pattern. The measures indicate relative increase in the number of Volunteers per Program family since December 1972.

Volunteer Working Style

The percentage of Volunteer working only with adults (Figure 102), shows a moderate upward trend ($R^2 = .367$). This linear trend would probably be much stronger except for the presence of a clear cyclical pattern which shows that a higher percentage of Volunteers tends to work with adults only during December reporting periods. The cyclical pattern is revised for Volunteers working only with youth (Figure 103). There is a higher percentage in this category in the June reporting period. The pattern for the percentage of Volunteer workers with both youth and adults (Figure 104) follows the same cyclical pattern as "adults-only" Volunteers--higher percentages in December reporting periods. No strong trend exist in either of these two categories. The cycle is probably explainable in terms of the larger numbers of youth participating in EFNEP during summer months.

Racial/Ethnic Background of Volunteers

There has been no consistent trend in any racial/ethnic category of Volunteers in the December 1972 to September 1977 interval. The percentage of white Volunteers has averaged about 54 percent during this time period (Figure 105), while about 38 percent of Volunteers have been black (Figure 106). Just under 7 percent of Volunteers have come from Spanish-surname backgrounds (Figure 107), while about 1 percent have been American Indians

(Figure 108). Considerably less than 1 percent of Volunteers have Oriental backgrounds (Figure 109), or are from backgrounds not otherwise classifiable (Figure 110) into categories used in EFNEP.

Percentage of Volunteers Relative to Percentage of 4-H Youth in Racial/Ethnic Categories

The situation here is somewhat different than that discussed in connection with Aide/homemaker ratios. Volunteers are not paid staff members of EFNEP, and are thus not subject to the same kinds of administrative control as Aides. While attempts are made to recruit Volunteers from the populations with which they will be working, Volunteer racial/ethnic characteristics are subject to certain variability or a function of what kinds of people feel they can afford to engage in Volunteer activities. In the light of this potential source of inequality in Volunteer/youth ratios, it is interesting to note that data in this category indicate generally more equitable ratios than is the case for Aides and homemakers. Measure for whites indicate a strong trend toward equal representation (Figure 111), as do those for the Spanish-surname Volunteer/youth ratios (Figure 113). There is no consistent trend for blacks, but the past and present ratios are close to ideal in any event (Figure 112). Ratio for American-Indian (Figure 114), Oriental (Figure 115), and "other" (Figure 116), ratios are again too variable to permit meaningful assessment.

Cost Per Family

For fiscal year 1977, the cost per Program family was \$179.31, or \$14.94 per Program family per month. The constant dollar (1967 base) figures were \$100.41 and \$8.37 respectively. For fiscal year 1971 the current dollar cost per Program family was \$104.46, or \$8.71 per Program family per month. The respective constant dollar figures were \$87.74 and \$7.32.

Conclusions and Recommendations Related to Trend Analysis

The Evolution of EFNEP

Trend analyses provide a useful tool for evaluating the manner in which the Program has evolved since its inception. The discussions in the "Results" section indicate in microcosm how individual Program variables measure the history of EFNEP. It is, however, useful to examine larger aspects of the Program in summary. The following discussions attempt to summarize the history of EFNEP in terms of the overall objectives of the Program:

- ✓ There is evidence for an improving impact of EFNEP on family food habits. The evidence is far from definitive, and there are elements of family food behavior which have shown little or no improvement. Overall, however, it appears that EFNEP is getting better and better at positively influencing the diets of its participants. To look at the situation from a different perspective, there is little or no evidence that the Program is having less impact on diet patterns in recent years. In the face of increasing efficiency of Program Aides in meeting with Program homemakers and attempts to cycle families through the Program more quickly, even a constant level of diet improvement would indicate an improvement in the efficiency of diet change activities.
- ✓ There is evidence for improving efficiency of EFNEP in involving Program homemakers in working sessions. This observation is supported by the number of Program families per Aide, the number of Aide visits per Program family, and the total percentage of Program families worked with in the reporting month. It appears, then, that the adult component of the Program is experiencing a continuing increase in efficiency of Aide activities.
- ✓ There is evidence for continuing EFNEP success in locating and working with an appropriate target population. In most areas important to Program targeting goals, EFNEP is either improving or maintaining its capability for finding and enrolling participants with family and/or homemaker characteristics indicative of a need for EFNEP services. In terms of family income, for instance, the real income of families enrolling in EFNEP has actually been dropping slowly over the nine years of EFNEP operation. While the percentage of new participants with minimum diets has shown little change, the corresponding percentage for adequate diets has been steadily dropping. This indicates a reduction in the overall diets adequacy of diets of incoming EFNEP families. Younger homemakers are being enrolled. Higher percentages of food stamp families are being enrolled. All of these trends show that EFNEP is continuing to locate and work with appropriate groups. Even some measures which, at first glance, show a degradation are indicative of continuing Program success in finding families with potentially great nutritional need. The percentage of homemakers with low education levels has, for example, been dropping. This trend is consistent, however, with that ongoing in the nation as a whole. The percentage of EFNEP families in this category continues to be many times the national average. Thus it is fair to say that EFNEP targeting remains appropriate to the objectives of the Program, and may be improving in certain areas.

- ✓ There is evidence for an increasing concentration on the 4-H youth component of EFNEP. The 4-H youth component of EFNEP has undergone a continuing expansion throughout its history. Even though total funds for the 4-H youth component remained constant from 1971 through 1978, the number of youth in comparison with the number of Program families has risen steadily. In the face of an inflation-reduced budget, it is apparent that the 4-H youth component is operating with increasing efficiency. The EFNEP Reporting System contains no data on youth food behavior, nutritional knowledge, or length of participation. It is therefore impossible to relate this increased efficiency to changes in Program effectiveness. All things being equal, however, it is apparent it is getting more out of the money available for the youth component.

Overall, the results of the trend analyses conducted in the course of this project can be said to be favorable to EFNEP. Most data indicate stable or improving Program activities. Those which may indicate a degradation of EFNEP operation are discussed separately below.

Comparative Assessment of Food Stamp Recipients and Non-Food Stamp Recipients

The data available from the EFNEP national Reporting System indicate that families which are classified as receiving food stamps are a population distinctly different from those families classified as not receiving food stamps. There is some reason to question the accuracy of such a classification, since it must be made only at the point where the EFNEP data are collected rather than being an evaluation of the relative participation of the family in the food stamp program over some longer period of time. That is, there is no indication in the EFNEP Reporting System information of how long families classified as receiving food stamps have been receiving them, nor whether families classified as not receiving food stamps have ever received them. These are real concerns, and it is probable that the lack of such information (in particular the ability to factor such information into assessments of the relative characteristics and performances of the separate subgroups) causes the two subgroups to look more alike than they otherwise would. The information available in the Reporting System, however, appears to indicate that this "leveling" effect is less pervasive than one might fear. It is apparent that food stamp families do differ from non-food stamp families in a number of important dimensions. Also, these dimensions are precisely those on which one would expect differences to exist. Specifically, food stamp families, in comparison to non-food stamp families:

- ✓ Have much lower incomes. This result is, of course, not surprising, since for a given family size a lower income is required to become eligible for food assistance. It should be noted, however, that the income data for EFNEP do not include the value of food stamps received as income; this situation means that the two income values are, in terms of real purchasing power, actually closer than the data indicate.

- ✓ Have much lower food expenditures. Again, this result is not surprising, since one of the purposes of the food stamp program is to reduce the cash outlay for food.
- ✓ Have substantially larger families. This finding tends to amplify the food outlay and family income data discussed above, since the differences per family member are greater than the differences for families as a unit.
- ✓ Have higher participation levels in other forms of assistance programs. This statement is true of welfare participation, school lunch programs, and FHA participation. The reason is probably the income-related test for eligibility for most social assistance programs.
- ✓ Have a somewhat greater percentage of children in their families. A larger family size exacerbates problems associated with inadequate income. Thus, families with a larger percentage of children are, all other things being equal, more likely to need most forms of assistance.
- ✓ Are more likely to be involved in individual, rather than group, working sessions. The reason for this difference is not clear; it may be that food stamp homemakers, because of their limited resources, have less flexibility to attend group sessions of EFNEP.
- ✓ Have slightly younger homemakers. While there is no substantial difference in the youngest category of homemakers, families receiving food stamps have a much smaller number of homemakers in the oldest age category. This is probably due to food stamp eligibility constraints, and is consistent with the differences which one would expect between the two subgroups.
- ✓ Have homemakers with somewhat less education. Education being highly related to income, this difference probably bears on the reasons for family need for food stamps.

The situation with respect to differences in diet patterns between the two subgroups is far from clear. With data from only three reporting intervals to evaluate, identification of consistent and meaningful differences between the subgroups is difficult. In general, it appears that food stamp recipients come into the Program with somewhat worse diets than those who do not receive food stamps. Differences are most marked in the "vegetables and fruits" food group, but are also evident to a lesser degree in other food groups and overall diets. After 24 months of Program participation, the situation is more mixed, with differences tending to shrink in all categories except "vegetables and fruits." Proportional improvement in diets tends to be somewhat greater in the food stamp subgroup, except in the "no servings" categories of individual food groups. In summary, it appears that the diet patterns of the two subgroups are not markedly different, but that food stamp recipients tend to have slightly poor nutrition when they enter the Program. Improvement during the period of EFNEP participation appears to be slightly greater for food stamp recipients, mainly because they had a possibility of greater achievement.

Implications for Changes in EFNEP Operations

There are few unequivocal recommendations for change in EFNEP operations which can be made on the basis of the results of the trend analyses. Lacking any external baseline for assessing the performance of the Program on an absolute basis, suggestions are necessarily limited to areas in which trends appear to be running counter to the established objectives of EFNEP. It would be inappropriate to suggest, for instance, that greater percentages of homemakers should be reporting adequate diets after a certain period of Program participation, since there is no basis for determining the extent of dietary improvement which could be attained by some theoretical "perfect" EFNEP-like program.

Another factor which tends to constrain the utility of the trend analyses for Program decision-making is the nature of the data themselves. Since data in the EFNEP national Reporting System are aggregated (i.e., summarized at the unit level), significant interrelationships among important Program variables can be obscured. The kind of *ex post facto* research performed in this project is perhaps best used to guide the course of more detailed examinations into phenomena which may be relevant to Program operations. We have attempted throughout this report to specify probable causes for the results obtained. Before major shifts in EFNEP emphases can be justified, more rigorous examinations of these causes should be undertaken.

Bearing in mind these cautionary notes, there are several areas in which it appears that some refocusing of EFNEP activities may be warranted. These areas include:

- ✓ Concentration on welfare recipients. It seems appropriate that welfare reciprocity should be a useful test of the need of families for EFNEP services. While welfare reciprocity is not *prima facie* evidence of nutritional inadequacy, it stands to reason that the limited financial resources made available through welfare assistance programs may make it difficult for families to purchase and serve adequately nutritious meals. Yet the percentage of EFNEP Program families receiving such assistance has declined over the past four years. More vigorous recruitment of families receiving welfare may therefore be warranted. It should be noted, however, that this project did not seek to assess the level of welfare receipt nationwide. It is possible that its decline among Program families is due to a pervasive national trend. This issue should certainly be investigated before EFNEP operations are refocused to attempt to recruit welfare recipients.
- ✓ Concentration on urban families. After a reasonably steady increase in the percentage of Program families residing in urban areas in the first six years of EFNEP operations, this percentage has steadily declined. While dietary inadequacy is not limited to the cities, a focus on urban populations has been a goal of EFNEP in the past. Unless there is a compelling reason to believe that this focus is no longer appropriate, it would appear that efforts to work in urban areas should be emphasized.

- ✓ Concentration on improvements in the "vegetables and fruits" food group for food stamp recipients. This is the only area in which food stamp recipient nutritional levels were demonstrably and markedly different from those of families which did not receive food stamps. It may be difficult for participating families to acquire and use foods in this food group, although this does not seem likely. Whatever the reason for the difference, a concentration on this aspect of nutrition for food stamp families appears to be warranted. This effort could be well supported by a study of the reasons for lower levels of fruit and vegetable consumption.

- ✓ Concentration on hiring black and Spanish-surname Aides in the same proportion as black and Spanish-surname homemakers. Trend data indicate that black and Spanish-surname aides exist in lower percentages than homemakers in the same racial/ethnic groups. It is necessary to emphasize here that this phenomenon may be a result of an interaction among racial/ethnic background, size of unit, and number of Program families per Aide. If a larger proportion of white families reside in small rural units, and if the number of Program families per Aide is lower in these units than in larger units, the result would be an apparent overrepresentation of white Aides. There are some indications that these situations do exist, but the extent to which they affect the Aide/homemaker ratios is unknown. If the ratios are substantially as they appear in the trend analysis and are unaffected by differences in unit size, number of Program families per Aide, or other confounding factors, then EFNEP has had and continues to have fewer minority Aides than would be expected on the basis of the percentage of minority Program families. If so, intensive efforts should be made to rectify the situation. The use of indigenous Aides is a cornerstone of EFNEP principles and philosophy; to the extent that minority Aides are underrepresented, the objective of using indigenous paraprofessionals is not being met (at least insofar as racial/ethnic background is concerned).

PRINTOUT EVALUATION

To set the stage for a discussion of printout evaluation, it is necessary to summarize the kinds of printouts currently produced in the EFNEP Reporting System. Currently these are six in number:

- ✓ Unit Printout (Population). This report is generated from ES-255 data received from all EFNEP units currently active in the Program. It gives summary information on items such as: homemakers and Aides at the beginning and end of the reporting period; homemakers and Aides dropped and added during the reporting period; active and cumulative youth and Volunteer; racial/ethnic backgrounds of Aides, homemakers, youth, and Volunteers; and other information bearing on numbers of staff and participants. These data are cumulated for the nation as a whole, for the individual States, and for individual Program units. Prior to June 1976 this printout was produced twice a year--at the middle and end of each fiscal year. Currently, the report is produced yearly for end of fiscal year data, except for the sample units which submit it twice a year.
- ✓ Unit Printout (Sample). This report is identical to the Unit Printout (Population), except that it uses only information from about 160 sample units, rather than the full set of 1,100 or so Program units. It is produced each March (i.e., on the basis of data collected at the middle of each fiscal year).
- ✓ Sample Unit Printout. This report is generated from ES-256 data received from the sample of approximately 160 sample units. It contains information on food behavior of homemakers, homemaker background information (age, education), and family background information (participation in food and financial assistance programs, income, age of family members, family size, etc.). Data are summarized for the nation as a whole (in the form of weighted national averages), for the individual States, and for each unit.
- ✓ Sample Unit Printout Summary. This report contains essentially the same information as that presented in the Sample Unit Printout. It contains information in the form of weighted national averages, and also summarizes averages and totals for classes of sample units defined by the number of Program families in the unit.
- ✓ Food Stamp/Non-Food Stamp Printout. Again, this report contains the same sorts of information as are presented in the Sample Unit Printout and the Sample Unit Printout Summary, but the data are split into two categories: summaries for families which receive USDA food stamps and summaries for families which do not receive USDA food stamps. Only national summaries are provided.

- ✓ Sample Unit Summary Charts. This printout provides bar charts or histograms for a variety of information types reported on the Sample Unit Printout.

As originally conceived, this project was to merely use printout data as supplied by SEA. During the course of the project, however, it became necessary to perform a third printout evaluation task--assessment of the accuracy of printout data. During analyses of printout information it became clear that some errors existed in the EFNEP printouts. These errors invalidated some of the analyses which had already been performed during the study. If left uncorrected, they could potentially mislead EFNEP management, and were inconsistent with supposedly similar information calculated for previous and/or subsequent reporting periods. It was necessary, therefore, to identify the causes of these errors and to correct them prior to subsequent analysis and discussion of the printout data.

It is important to note that assessment of printout accuracy was not initially an objective of this project. Printout and other Reporting System information were to be used in analyses, but these data were to be accepted as accurate. When it became obvious that inconsistencies and errors existed in the data, modification of the original goals of the project became necessary. This is an important observation in that it helps set limits on the comprehensiveness of the printout accuracy assessment process as performed in this contract. Synectics did not attempt to perform an in-depth rigorous assessment of printout inaccuracies. Such a task would have been beyond the scope of the project, and would certainly have consumed project resources intended for data analysis and evaluation. Errors were detected as a result of performing trend and correlation analyses, and thus represent ad hoc investigations of inconsistencies in the printout data. Problems thus detected tend to be relatively blatant; more subtle errors (and even some relatively obvious ones in areas where project analyses were not performed) may still exist in the printouts.

Methodology in Printout Evaluation

No rigid set of procedures exists for assessing the adequacy and appropriateness of management information system output. It is useful, however, to follow some rough sequences of activities which can help to identify requirements for new analyses or data to be included in the system. In the current project, these activities included:

- ✓ Familiarization with the characteristics of the EFNEP Reporting System and associated printouts. In most organizations, a unique argot evolves in the course of organizational growth. This specialized terminology is used as a conversational and textual "shorthand" to facilitate efficient communication among knowledgeable organization members. When computer-mediated management information systems are employed, the problems of interpretation and understanding of this terminology are compounded by the typical brevity of headings and titles on computer printouts. EFNEP is no exception to this general rule.

Another characteristic of management information systems is that they tend to evolve along with the organizations to which they relate. Some items drop out, others are added, and still others, though seeming to continue in system printouts, are changed so that their meaning may not remain constant over the life of the program. Again, this situation has existed in EFNEP printouts.

Familiarity with the EFNEP Reporting System and its associated printouts is thus an important consideration. This familiarity was gained through:

- Direct inspection and analysis of EFNEP printouts.
- Discussions with EFNEP management personnel.
- Discussions with Statistical Research Division (ESCS) personnel responsible for generating sampling and weighting strategies.
- Discussions with personnel responsible (Communications and Data Services Division, SEA) for providing and modifying software used to produce EFNEP printouts.

✓ Familiarization with algorithms used to produce specific EFNEP printout variables. One objective in assessing printout adequacy and appropriateness is assuring that suitable algorithms were used to produce printout data. This objective was addressed in the following ways:

- Hand calculation of EFNEP variables and comparison with printout information.
- Discussions with EFNEP management personnel.
- Discussions with personnel responsible for generating sampling and weighting strategies.
- Discussions with personnel responsible for producing, modifying and running software used to produce EFNEP printouts.

✓ Familiarization with EFNEP operational characteristics, goals, and objectives. Familiarity with EFNEP Reporting System characteristics only provides insight into information currently produced by that system. To evaluate the adequacy of the printout for supporting Program monitoring tasks, it is necessary to identify what aspects of EFNEP are viewed by national EFNEP management as being particularly important. Specific areas of organizational operations and Program goals investigated included:

- Characteristics of EFNEP operations with adults.
- Characteristics of EFNEP operations with 4-H youth.

- Procedures for collecting data from/on Program families, Program homemakers, 4-H youth, Aides, and Volunteers.
- Procedures for summarizing data at the unit level.
- Current emphasis of both adult and 4-H youth EFNEP components.
- Timing and intent of changes in Program operations.
- Specific concerns of EFNEP management, USDA administration, Congress, State and local CES personnel, and other interested parties.

These considerations were investigated through:

- Discussions with EFNEP management.
- Review of EFNEP documentation, including:
 - Studies and descriptions of Program operations.
 - Training materials.
 - National studies.
 - State and local studies.

The above information was considered in assessing requirements for changes in EFNEP printouts.

Methodology for assessing the accuracy of printout data was to some extent developed on an ad hoc basis. As possible inconsistencies were noted, attempts were made to determine the reasons for the inconsistencies. Methods used included:

- ✓ Examination of specific data points in comparison with previous and/or subsequent information.
- ✓ Development of hypotheses about how errors or inconsistencies might have arisen.
- ✓ Development of hypotheses about algorithms used to calculate printout variables.
- ✓ Extraction of data from EFNEP printouts and/or other Program information.
- ✓ Calculation of summary measures using extracted printout data and hypothesized data analysis algorithms.
- ✓ Comparisons of results of possible data collection and analysis strategies with those produced on EFNEP printouts.

- ✓ Discussions with EFNEP management personnel concerning the source and utility of printout data.
- ✓ Discussions with personnel responsible for generating, maintaining, and running software which produces EFNEP printouts to determine algorithms currently being used to produce printout data.
- ✓ Discussions with personnel responsible for generating weighting and sampling procedures to establish the intent of system designers for producing EFNEP printouts.
- ✓ Examination and review of computer software documentation to ascertain how data analytic algorithms were converted into computer software.
- ✓ Direct inspection of computer software to ascertain the nature of algorithms actually being used to produce printout information.

Results of Printout Evaluation

Printout Adequacy

Results of printout adequacy evaluation are, of course, not quantitative. Rather, they are observations on the part of project staff about the suitability of printouts for use by EFNEP management. Two important results must be stressed before any observations about inadequacies:

- ✓ The data presented in EFNEP printouts are without exception useful (indeed necessary) for monitoring Program operations. It appears that there have been no major gaps in the construction of the Reporting System. EFNEP printout information appears to be that set of data which (given the input characteristics as contained on forms ES-255 and ES-256) represents the core of a well designed management information system. We would, with few exceptions, not suggest that any of the contents of EFNEP printouts be eliminated. Rather, the results of the analysis suggest that some information might be added to supplement information currently made available.
- ✓ EFNEP printouts appear to be well organized for presentation to EFNEP management personnel. Information from the printouts is generally quite easy to extract, and headings are clear and meaningful for persons familiar with EFNEP. Because the printouts appear currently well organized, and because significant alteration could create gratuitous confusion and errors, results of the evaluation do not imply a need for change in the organization of the printouts.

The two comments presented above should make it clear that the current EFNEP printout system is (as far as concept and format are concerned) well

thought out and appropriately targeted for its EFNEP management audience. It is a rare management information system, however, which cannot be improved; the following results indicate potential areas for EFNEP Reporting System enhancement.

- ✓ Ratio and rate data are often not calculated for existing EFNEP variables. The EFNEP printouts do include some important rate and ratio data, such as Program families per Aide and Aide visit rate per Program family. There are a number of additional calculations which could be made and printed out which would be useful from a Program monitoring standpoint.
- ✓ Trend information is not held in or output by the EFNEP Reporting System. Although the software system which generates EFNEP printouts does hold some information in history files, these data are used only as input to subsequent processing. They are not output in printouts, nor would the particular data items involved be useful for EFNEP management. Historical and trend information is quite important in EFNEP, since it will define whether operations are improving or degrading with respect to critical Program variables.
- ✓ Potentially important external information is not included in the EFNEP Reporting System. By "external" information, we mean data which are not available from the EFNEP Reporting System or other USDA sources (e.g., national income and food expenditure data, national educational attainment data, etc.). This kind of information can substantially enhance the capability of EFNEP management for accurately assessing EFNEP status and trends.

Specific suggestions for the incorporation of the enhancements implied by these results are presented in the "Conclusions and Recommendations" section which follows.

Printout Accuracy

During the course of the project, a number of inconsistencies in the printouts were noted. Some of these inconsistencies appeared to be the result of errors in the software which produces the printouts. Others may have been the result of such errors, but it is also possible that they are due to misunderstandings among the three groups cooperating on printout planning and production--EFNEP national management, Economic and Statistical Cooperative Service personnel (who designed the sampling and weighting strategies), and SEA-Communication and Data Services Division personnel (who design, modify, and run the EFNEP printout production system). The reasons for this miscommunication (if it indeed occurred) are not clear, since documents relating to the original intentions in the establishment of the Reporting System and the printout production system were not available. Specific inconsistencies noted during the project included:

✓ For a given food record, the "TOTAL" category was incorrect for "average food outlay" and "average income." The correct "average income" and "average food outlay" values for the TOTAL group should have been a weighted average of the corresponding averages for the FOOD STAMP and NON-FOOD STAMP groups. This situation is best illustrated by an example. For simplicity's sake, the values for the Food Record #1 in the first unit appearing in Class 1 in the March 1977 printout data (Alaska, Unit #10) are used. In this unit, the following was reported:

	<u>Number Reporting</u>	<u>Average Income</u>	<u>Average Food Outlay</u>
Food stamps	9	365	143
Non-food stamps	68	503	189
Total	77	434	166

Apparently, the average for the "Total" was calculated by simply adding the averages for the "food stamps" and "non-food stamp" groups and dividing by 2 (i.e., $365 + 503 = 868$, $868 \div 2 = 434$; and $143 + 189 = 332$, $332 \div 2 = 166$). This was an unweighted average, and as such was inappropriate. In this situation, the appropriate calculation is:

$$AVG_{TOT} = \frac{[(AVG_{FS}) \times (N_{FS})] + [(AVG_{NFS}) \times (N_{NFS})]}{N_{FS} + N_{NFS}}$$

where:

AVG_{TOT} = Average for the total group.

AVG_{FS} = Average for the food stamp group.

AVG_{NFS} = Average for the non-food stamp group.

N_{FS} = Number of homemakers reporting for the food stamp group.

N_{NFS} = Number of homemakers reporting for the non-food stamp group.

Using this formula, the correct weight average for average income should be:

$$AVG_{TOT} = \frac{[365 \times 9] + [503 \times 68]}{9 + 68}$$

$$AVG_{TOT} = \frac{[3285] + [34204]}{77}$$

$$AVG_{TOT} = \frac{37489}{77}$$

$$AVG_{TOT} = 486.87$$

Using the formula in a similar manner for "average food outlay," the weighted average comes out to be 183.62. The table for Food Recalls for Alaska Unit #10 should, therefore, be:

	<u>Number Reporting</u>	<u>Average Income</u>	<u>Average Food Outlay</u>
Food stamp	9	365	143
Non-food stamp	68	503	189
Total	77	487	184

It should be noted that there was one situation in which this problem does not occur: when the number of cases for a "food stamp" or "non-food stamp" group is zero, and the other group is nonzero, the "Total" averages were correct. Apparently, the program used to create the printouts checked the existence of "no data" in the "food stamp" and "non-food stamp" categories.

The averages for the "Total" category are correct only when one or both of the following conditions exist:

- The numbers of persons reporting are equal for the "food stamp" and "non-food stamp" groups.
- The average dollars (for either "average income" or "average food outlay") are equal.

Therefore, many, if not most of the averages in the "Total" group in the printouts were incorrect.

- ✓ The "State" data for average income and average food outlay, in situations where there is more than one unit per class, within a State were incorrect. Again, an example is the best way to illustrate this. In Class 1, there were three units in North Carolina represented (Units 403, 404, and 505). The relevant figures for Food Record #1 were:

<u>Unit</u>	<u>Category</u>	<u>Number Reporting</u>	<u>Average Income</u>	<u>Average Food Outlay</u>
403	FS	8	360	180
	NFS	9	380	190
	Total	17	370	185
404	FS	0	0	0
	NFS	12	191	90
	Total	12	191	90
505	FS	22	233	62
	NFS	8	371	87
	Total	30	302	75

The printout for the State data for North Carolina was as follows:

<u>Category</u>	<u>Number Reporting</u>	<u>Average Income</u>	<u>Average Food Outlay</u>
FS	30	593	242
NFS	29	942	367
Total	59	863	350

Two types of errors have occurred here:

The figures in the "average income" and "average food outlay" columns were the sums of the averages for the three units; thus, they were not averages at all.

The numbers appearing in these columns were not easily convertible into true averages for the State, since, again, the averages should have been weighted averages. Compounding this problem was the fact that the "Total" category averages were incorrect because they were not weighted averages (except for Unit #404, since there were no "FS" category cases).

The appropriate algorithm for obtaining weighted averages in this case is:

$$AVG_{ST} = \frac{\sum [(AVG_{UNIT}) \times (N_{UNIT})]}{\sum (N_{UNIT})}$$

where:

AVG_{ST} = State average for given category (FS, NFS, Total).

AVG_{UNIT} = Unit average (FS, NFS, Total).

N_{UNIT} = Number of cases in a unit for a given category (FS, NFS, Total).

For "average income" in the FS category, therefore, the correct calculation is:

$$\begin{array}{rcl} 8 \times 360 \text{ (Unit 403)} & = & 2,880 \\ 0 \times 0 \text{ (Unit 404)} & + & 0 \\ 22 \times 233 \text{ (Unit 505)} & + & \underline{5,125} \\ & & 8,005 \end{array}$$

$$N = 8 \text{ (Unit 403)} + 0 \text{ (Unit 404)} + 22 \text{ (Unit 505)} = 30$$

$$AVG = 8005/30 = 266.83$$

Note that this formula would be appropriate for the "Total" category only if the averages here were weighted averages as discussed above.

✓ The "Class Totals" for "average income" and "average food outlay" were incorrect. In the printouts there are two types of class totals:

- Those which appear at the end of a section of unit and State totals within the printouts, headed "Class 1 (Totals)," "Class 2 (Totals)," etc.
- Those which appear at the beginning of the "Nutrition Practices of Program Homemakers Evaluated Against the Basic Four" section. There are eight class totals (headed "Class 1," "Class 2," etc.) and an "Eighted (sic) U. S. Total."

There were problems with both of these sites of class totals.

- Class totals of the form "Class 1 (Totals)." The columns headed "average income" and "average food outlay" were not averages at all. These figures were merely the sums of the unweighted averages for the units in the class. The correct formulae for calculating the average is:

$$AVG_{CLASS} = \frac{\sum (AVG_{UNIT} \times N_{UNIT})}{\sum N_{UNIT}}$$

or:

$$AVG_{CLASS} = \frac{\sum (AVG_{STATE} \times N_{STATE})}{\sum N_{STATE}}$$

Again, this formula will only yield correct results if the unit and State averages have been calculated correctly using a weighted average formula.

There was a second problem with these sorts of class totals which is best illustrated by examining the print-out page headed "Class 2 (Totals)." Note that the figures for "Record No. 1" are as follows:

<u>Category</u>	<u>Number Reporting</u>	<u>Average Income</u>	<u>Average Food Outlay</u>
FS	920	8,947	3,383
NFS	881	1,792	3,998
Total	1,801	518	3,814

Even if these "averages" were treated as sums, the figures were inconsistent: the "average food outlay" data looked reasonably consistent (though they are invalid because of the factors discussed above), but the "average income" figures are not at all consistent.

As a verification, the "total" category averages for Class 2, Food Record #1, were summed, and a figure of 10,518 was obtained. Since the last three digits of this total are identical to the three digits appearing in the printout, we hypothesized that the following situation existed:

- The program which produces the printouts was designed to output a maximum of four digits for the "average income" column.
- All leading zeroes (i.e., those which appear to the left of nonzero digits and are not preceded on the left by a nonzero digit) were dropped (as they should have been).

Thus when the program calculated a value of 10,518 it was forced to truncate the first "1," yielding a value of "0518." The leading zero was then dropped, resulting in the value of "518" appearing in the printout data.

- Class totals of the form "Class 1." These class totals are not separated into food stamp and non-food stamp categories, but rather report only overall class totals.

It was suspicious that the "average income" and "average food outlay" drops rapidly after Record #4. This situation was not consistent with previous printout sets. These facts, combined with the nature of the State and class "averages," seemed to indicate that the algorithm for calculating these class totals was:

$$AVG_{CLASS} = \frac{\sum (AVG_{UNIT})}{NU}$$

where:

AVG_{CLASS} = Average income or average food outlay as it appears on printout sheets with a heading of the form "Class 2,"

AVG_{UNIT} = Averages from the units in a given class.

NU = The number of units.

Since the sum of the averages for the units [$\sum (AVG_{UNIT})$] appears on the printout sheets of the form "Class 2"

(Totals)," the accuracy of the hypothesis could be quickly verified. The formula used to create the class totals was indeed the one presented above. This formula was incorrect. Again, weighted averages were appropriate, and they were not being used to calculate the printout averages. The reason that the "average income" and "average food outlay" drops so strikingly in Records #5, #6, and #7 is that many of the units had no reports for these records. If a weighted average algorithm were being used, these cases would be treated as "no data" (as they should have been). With the method being used to produce the printouts, however, the "no data" cases were treated as "zero income" and "zero food outlay," and were, in effect, given a weight equal to the values from the units from which there were actual income and food outlay data. The appropriate (weighted average) formula for class totals is as follows:

$$AVG_{CLASS} = \frac{\sum (AVG_{UNIT} \times N_{UNIT})}{\sum (N_{UNIT})}$$

where:

AVG_{CLASS} = Weighted average dollars.

AVG_{UNIT} = Weighted average for each unit.

N_{UNIT} = Number of homemakers reporting for that unit.

- The "Eighted (sic) U. S. Total" for "average income" and "average food outlay" were incorrect. The reasons for this inaccuracy are identical to those for the class totals: unweighted averages were being used where weighted averages are the appropriate statistic.

The preceding problems have been corrected by CDS; printouts produced now reflect these changes.

- ✓ Truncation by computer programs. It appears that the computer programs which produce the EFNEP printouts truncate rather than round results. The effects of this problem are best illustrated by example. The fraction 17,918/8,972 equals (to four decimal places) 1.9971. This number can be reduced to a single decimal place by rounding (2.0) or truncating (1.9). Rounding is the preferred method, since it will produce a figure with less error than truncating. Truncating will always produce approximations which are too low; rounding produces approximations which are either too high or too low (unless fractions come out "even" to the required number of decimal places). The net effect of rounding tends to be self-canceling, while that of truncating is additive. For most data in the EFNEP printouts, the difference between the two

methods is insignificant. There is no practical difference, for instance, between 34.63 and 34.64. In two specific circumstances, however, the consequences of truncation can be bothersome:

- When the numbers to be output are small and not carried out to several decimal places. Average family size is, for instance, output with one place to each side of the decimal point (e.g., "3.9"). Using rounding, the maximum error in this approximation is roughly .1/3.9 or about 2.6 percent; the maximum error using rounding is .05/3.9 or about 1.3 percent.
- When a number of calculations are to be performed using truncated values. Consider the sequence:

$$((3.19 + 4.78) \times 1.09) \times 2.79 = 24.24$$

Using rounding to one decimal place, the result is 24.64. Truncation yields a value of 21.06.

- ✓ Failure to weight national averages and summaries for the Unit Printout (Sample). Data output in the Unit Printout (Sample) for March 1977 and March 1978 were apparently generated using the same software used to produce the Unit Printout (Population). Since the Unit Printout (Sample) uses data from the approximately 160 sample units, and since these units are selected with a disproportionate stratified sampling strategy, national averages and summaries must be weighted to provide accurate population estimates. The Unit Printout (Population) software does not have to provide weighting, since it uses data from all of the EFNEP reporting units. The estimates from the sampled units can be widely different from those based on the entire population if appropriate weighting techniques are not applied, and this was indeed the case with the March 1977 and March 1978 Unit Printout (Sample).
- ✓ Failure to weight national averages for the Food Stamp/Non-Food Stamp Printout. The problem here is similar to the one reported above--failure to weight population estimates derived from a disproportionate stratified random sample. This makes it impossible to validly compare results of the food stamp/non-food stamp groups with the total group as portrayed by the Sample Unit Printout. An attempt was made to sidestep this problem by "fooling" the software which produces the Sample Unit Printout into assuming that each of the food stamp and non-food stamp data subsets was actually a complete (combined) dataset. This method produced the figures discussed and graphed in the "Trend Analysis" section, but its validity has not yet been completely established. In fact, some of the estimates produced by this manner appear to be somewhat in error. In any event, this solution was a stopgap measure at best; the software should be revised to provide accurate data in the future.

✓ Potentially misleading percentages in the Food Stamp/Non-Food Stamp Printout. Currently, this printout expresses percentages using the total number of families having a given trait (e.g., residing in urban areas). The Sample Unit Printout expresses these percentages using the total number of families in the printout. This situation is difficult to describe in words; an example will therefore be used to clarify the problem. Figure 2 presents a hypothetical group of families classified in two ways: receipt of food stamps and residency in urban areas. The current Food Stamp/Non-Food Stamp Printout would calculate the percentage of families residing in urban areas in the food stamp group as $60/140 = 43$ percent. In other words, a total of 140 families resided in urban areas. Of this 140, 60 families (or 43 percent) also received food stamps. To be consistent with the Sample Unit Printout, the calculation should be $60/80 = 75$ percent. With this method, a total of 80 families receive food stamps; of this 80, 60 also resided in urban areas. It is obvious that there is a vast difference in interpretation of such percentage figures. Neither method is, strictly speaking, incorrect; the method used in the Sample Unit Printout is, however, the one usually employed. Discussions with EFNEP management indicate that the method currently used in the Food Stamp/Non-Food Stamp Printout is not particularly useful and should be changed to the "percentage of subgroup defined by food stamp reciprocity" method. It should be noted that, since the data on the Food Stamp/Non-Food Stamp Printout have not been weighted, the information will not be correct no matter what algorithm is used for calculating percentages.

	FOOD STAMP RECIPIENTS	NON-FOOD STAMP RECIPIENTS
RESIDES IN URBAN AREA	60	80
DOES NOT RESIDE IN URBAN AREA	20	20

Total 1: Food Stamp Recipients = $60 + 20 = 80$
 Total 2: Non-Food Stamp Recipients = $80 + 20 = 100$
 Total 3: Families Residing in Urban Areas = $60 + 80 = 140$
 Total 4: Families Not Residing in Urban Areas = $20 + 20 = 40$

Figure 2: Hypothetical Grouping of Food Stamp and Non-Food Stamp Families in Urban Areas

- ✓ Inaccuracy of categorical percentages. For the March 1978 Sample Unit Printout, the totals of homemaker age subcategories did not sum to 100 percent. Discussions with SEA-CSDS personnel responsible for producing the printouts indicated that this problem was not due to a "no data" category, but rather to some problem in the software. Data were recalculated by SEA-CSDS and the correct results made available for the reanalysis of trend data.

Printout Evaluation Conclusions and Recommendations

Implications of the printout evaluation for EFNEP operations can be grouped into six general categories:

- ✓ Correction of printout errors.
- ✓ Establishment of procedures for review of printouts.
- ✓ Clarification of sampling and weighting strategy.
- ✓ Incorporation of new printout items.
- ✓ Inclusion of external information in printout processing.
- ✓ Incorporation of new printouts.

These items are discussed in detail below.

Correction of Printout Errors

It goes without saying that printout errors and inadequacies should be eliminated. As indicated previously, some of the errors detected by the Synectics project team have already been corrected. Others, however, have not, and must of course be rectified if the printouts are to be useful to EFNEP management. Since Synectics was not intimately involved in either the planning of the EFNEP Reporting System or the generation of Reporting System software, it is impossible to specify in this report detailed steps which must be taken to correct the problems. These include:

- ✓ Incorporation of weighting algorithms for production of the Unit Printout (Sample).
- ✓ Incorporation of weighting algorithms for production of the Food Stamp/Non-Food Stamp Printout.
- ✓ Alteration of algorithms for calculating subgroup percentages in the Food Stamp/Non-Food Stamp Printout.

In line with these recommendations, it is important to note that some of these errors might well have gone undetected had this project not been performed. This situation indicates a need for periodic review of printout accuracy and quality, a recommendation which is addressed fully below.

Establishment of Procedures for Review of Printouts

Currently, there is no individual with both the appropriate background and the responsibility for assessing the accuracy of EFNEP printouts. Synectics' involvement in such an assessment was virtually accidental; if different sets of analyses had been performed some of the problems discussed above may have gone undetected. There are a number of personnel within USDA who could fulfill this role, but these people neither report directly nor are under current contract to EFNEP national management. It is imperative that someone fulfill explicitly; this recommendation is particularly cogent when the printout software is about to be changed or has just been changed.

Procedures for evaluating the accuracy of printout data are not easily specifiable, at least at the level of detail required to perform the actual checking. Some of the more obvious tasks to be performed are:

- ✓ Extraction of data from printouts, individual calculation of measures contained in the printouts, and comparisons of the results of "off-line" calculations with printouts.
- ✓ Evaluation of printout data in comparison with subsequent and antecedent data.
- ✓ Verification of accuracy of algorithms used in report generation.

Since some printout errors may result from miscommunication, the person responsible for checking the accuracy of printouts should also be prepared to coordinate revisions of printout production software with the group(s) responsible for generating printouts. In addition, it may be necessary to coordinate sampling and weighting strategies with groups responsible for these aspects of printout production.

With these requirements in mind, it is possible to specify the skills, knowledges, and backgrounds of the kind of person(s) who would be most appropriate to fulfill the accuracy verification role. The data verification analyst should:

- ✓ Have nontrivial familiarity with EFNEP operations, history, and objectives. This background is necessary to assure that the analyst will be sensitive to issues of primary importance to EFNEP. Additionally, it will give the analyst a "feel" for which printout results are sensible and which do not square with characteristics of the Program as the analyst knows them to be. This background will also permit the data verification analyst to suggest software modifications best suited to supporting EFNEP management.

✓ Be intimately familiar with the history and content of the EFNEP printouts. Knowledge of the history of individual Reporting System variables is necessary to assess the sensibility of printout results. Knowledge of the content helps assure that the analyst will be able to specify problems clearly and succinctly, and to accurately map a route to problem solution.

✓ Have practical background in research statistics. It is not necessary that the data verification analyst have advanced degrees in mathematical statistics, nor must he/she be a leading authority on research design or statistical analysis. The position does, however, require a solid working knowledge of areas such as:

- Elementary applied statistics (central tendency, dispersion, methods of data accumulation and summarization, trend analysis, etc.).
- Elementary sampling theory and practice (sampling strategies, population estimate reliability, etc.).
- Basic research design (threats to internal and external validity, use and misuse of control groups, longitudinal designs, etc.).
- College-level algebra.

This background is necessary not only to assess the accuracy of printout data, but also to support EFNEP management in evaluating the significance of printout data as they appear.

✓ Be familiar with basic elements of computer data processing. While this background is not absolutely necessary, it will enable the data verification analyst to communicate with EDP personnel responsible for producing the printouts. This knowledge was, for instance, invaluable to Syntectics project personnel in suggesting possible routes to stopgap solutions to problems with the Unit Printout (Sample) and Food Stamp/Non-Food Stamp Printout. Familiarity with data processing technology will also enable the data verification analyst to provide to EFNEP management assessments of time and effort involved in modifications to printout software or production of special analytic results.

✓ Be able to communicate effectively both in text and verbally. The position of data verification analyst will undoubtedly require much interaction with EFNEP management, other USDA personnel, other government personnel, and external contractors. Good communications skills are necessary if misunderstandings and consequent wasted efforts are to be avoided.

✓ Display curiosity and inquisitiveness. While these characteristics may not be easy to define, they are among the most

important for the hypothetical data verification analyst. Tracking down errors in the EFNEP printouts is often akin to detective work. Inquisitiveness and curiosity will contribute substantially to the analyst's capability for identifying root causes of printout problems.

- ✓ Be subordinate and report directly to EFNEP management. The data verification analyst position is required to assure that reports to EFNEP management are valid. It is highly appropriate, therefore, for the position to be filled by someone who is essentially an advocate for the EFNEP point of view. While smooth interdepartmental coordination will be required, the analyst's primary allegiance should be to EFNEP and not to other departments, organizations, or agencies doing work for EFNEP management. This does not mean that contractual arrangements, either with outside consultants or personnel employed by other USDA organizational elements could not work effectively in the data verification analyst role. It will be necessary, however, to somehow assure that primary working contacts and allegiances in fulfillment of this role are to EFNEP rather than other interests. All other things being equal, it is recommended that the data verification analyst be employed either directly or via contract with EFNEP management.

Clarification of Sampling and Weighting Strategies

Synectics had occasion to speak with representatives of both SEA-CDSD (designers of sampling and weighting strategies) and ESCS (producers of the EFNEP printouts). It appears that there may be some misunderstanding between these two groups concerning appropriate sample selection and weighting procedures. Specific areas of possible misunderstanding include:

- ✓ Source of figures for weighting national population estimates based on sampled EFNEP units. Discussions with ESCS-Statistics personnel indicated that sampling fractions used in weighting should be derived from the number of units in each class (population and sample). Conversations with SEA-CDSD personnel, however, indicated that the number of Program families in each class was being used as a basis for weighting. Synectics did not have an opportunity to analyze sampling and weighting strategies in detail. Since these strategies were developed by ESCS-Statistics, however, it would appear that ESCS-Statistics should have the final word on what the appropriate methods ought to be. The difference between the two methods should not be great, since the number of Program families was used as a basis for forming sampling strata. An empirical check on one year's data indicates a difference of less than 10 percent between the two methods. Synectics has been impressed with the knowledge and skill of ESCS-Statistics personnel, and would recommend accepting their opinions on sampling considerations. If printout production software had indeed not been using the

weighting strategies as stipulated by ESCS-Statistics, affected printouts should be corrected and the effects of the inappropriate weighting methods evaluated.

- ✓ Method for selecting the sample of units. In a dynamic situation where the composition of and size of EFNEP units are continually changing, the sample of units must be changed to accommodate to changes in the Program itself. Some reporting units become inactive; others increase or decrease in size. Both of these situations require an alteration in the sample of units used to form population estimates. According to discussions with SEA-CDSD personnel, units in the sample are replaced individually. In Synectics' opinion, the sample should be completely redrawn every year; ESCS-Statistics personnel apparently concur. There may, however, be practical limitations on the extent of sampling which can be performed. In any event, the situation should be discussed jointly by EFNEP management, ESCS, and SEA-CDSD, and a satisfactory resolution reached.

It is appropriate to emphasize again that Synectics' role in this project did not include a detailed examination of sampling and weighting strategies used in the production of EFNEP printouts. The recommendations presented above are based on rather hurried conversations aimed at quickly correcting printout problems. Weighting and sampling strategies were tangential issues in these conversations; their primary purpose was to elicit information on weighting and sampling procedures which had been stipulated by ESCS-Statistics. We have absolutely no reason to question any ESCS-Statistics sampling or weighting strategies; on the contrary, they appear carefully considered and accurately defined. We do have some concerns that something has been lost in the translation from ESCS-Statistics intentions to EFNEP Reporting System algorithms.

Incorporation of New Printout Variables

As indicated in "Results of Printout Evaluation," inclusion of some rate and ratio information in the EFNEP printouts may provide EFNEP management with useful information for tracking Program status and trends. It is perhaps germane to point out here that incorporation of these recommended items in the EFNEP printouts must be carefully considered by EFNEP administration. While none of the new data items suggested in this section requires the collection of new data, alteration of existing software can be an expensive proposition. Few of these recommendations will require particularly complex numerical manipulations, but revision of computer code, code comments, and software documentation can consume a seemingly inordinate amount of time and resources. We would suggest that any revisions be planned for a time when printout production software is being revised for other reasons, or when new personnel are being groomed to maintain the software.

The items described below are keyed to specific printouts or groups of printouts. Formulae are provided for each variable, indicating the method

for calculating each suggested printout item. Weighting has not been included in the formulae; we assume that weighting will be performed by a generalized algorithm.

- ✓ Suggested new printout items for the Sample Unit Printout, Sample Unit Printout Summary, and Food Stamp/Non-Food Stamp Printout.

- Percentage of family income spent on food. This variable will facilitate tracking what proportion of the family food dollar is expended for food. It can be calculated for each food recall as:

$$\frac{\text{Reported family dollar food expenditures}}{\text{Reported family income}} \times 100.0$$

- Food consumption percentage increases for various food recalls (after the first) expressed as a percentage of the percentage for that food group on the first food recall. This type of variable will permit EFNEP management to assess relative (as opposed to absolute) gains across food recalls. Since different percentages of homemakers enter the Program with given food consumption levels, use of this type of variable will put such comparisons on a basis which should make it easier to make valid comparisons across reporting periods. These percentages would be calculated as:

$$\frac{(\text{Percentage on Food Recall N}) - (\text{Percentage on Food Recall 1})}{(\text{Percentage on Food Recall 1})} \times 100.0$$

It should be noted that the utility of this type of measure is based on the assumption that the composition of active Program families remains relatively constant over time. Over the long run, differences in percentage deviations from Food Recall #1 scores will indicate any consistent trend in food consumption patterns.

- Food consumption percentage increases for various food recalls (after the first) expressed as a percentage of the percentage for that food group on the first food recall corresponding to the date of Program entry. In general, this measure is calculated in the same way as the one discussed immediately above, except that the base (score from Food Recall #1) is not drawn from the same reporting period as the later score. Rather, it is the score from the first food recall corresponding to the Program entry point for the homemakers included in the calculation of the later food recall percentages. For instance, if using the score from Food Recall #3 for June 1976, the base score for Food Recall #1 will be obtained from the data for June 1975 (roughly 12 months having elapsed between Food

Recall #1 and Food Recall #3). In the sense that roughly the same group of homemakers will be observed in both cases, this method has some advantages over the "unstaggered" method described above. There are, however, some practical disadvantages. First, the change in reporting periods occurring with the shift to September-September fiscal year has made it difficult to accurately track "staggered" food recall differences. Second, the method requires storing data from previous reporting period, a requirement which may substantially increase programming complexity and cost. Third, the interval of food recalls has not been exactly six months, so the composition of the group varies not only because of attrition but also because of existing aperiodicity in food recall data collection.

- Number of homemakers completing Food Recalls #2 through #6 expressed as a percentage of the number of homemakers reporting on Food Recall #1 for the appropriate previous reporting period. This measure gives an indication of the percentage of homemakers remaining in the Program after various lengths of EFNEP participation. The necessity for using "staggered" values means that the analysis is subject to the same problems as with the measure discussed previously. The variable should, however, provide insight into the rate at which homemakers are being cycled through the Program. The appropriate formula is:

$$\frac{\text{Number of persons completing Food Recall N}}{\text{Number of persons completing Food Recall 1 at appropriate previous reporting period}} \times 100.0$$

- ✓ Suggested new printout items for the Unit Printout (Population) and Unit Printout (Sample).

- Program family turnover rate. This measure should provide EFNEP management with an index of the rate at which Program families are being cycled through EFNEP. There are a number of ways in which turnover can be included; one of the simplest and most easily interpreted measures is the percentage of Program families dropped, calculated as:

$$\frac{PF_D}{PF_B} \div N \times 100.0$$

where:

PF_D = The number of Program families dropped during the reporting period.

PF_B = The number of Program families at the beginning of the reporting period.

N = The number of months in the reporting interval.

- Aide turnover rate. This measure provides a turnover index for Aides, and is calculated in the same manner as the analogous rate for Program families.
- Ratio of non-Program families to Program families. This measure provides an index of the extent to which EFNEP is succeeding in reducing the number of non-Program families. The index is calculated as:

$$\frac{\text{Number of non-Program families during last month of reporting period}}{\text{Number of Program families at end of reporting period}}$$

- Ratio of percentage of Aides in given racial/ethnic group to percentage of homemakers in the same racial/ethnic group. This index gives some insight into the extent to which Program Aides are indigenous to the racial/ethnic populations from which Program families are being drawn. Numbers greater than one will indicate a relative overrepresentation of Aides; numbers less than one will indicate a relative underrepresentation of Aides. The appropriate formula is:

$$\frac{\text{Percentage of Aides in a given racial/ethnic category}}{\text{Percentage of Program families in a given racial/ethnic category}}$$

- Percentage of Volunteers working with given groups. These measures will provide an index of the focus of Volunteer activity. The appropriate formula is:

$$\frac{\text{Number of homemakers in given working style (youth, adult, both) at the end of the reporting period}}{\text{Total number of Volunteers at the end of the reporting period}}$$

- Percentage of youth from Program families and non-Program families. This measure will provide an index of the source of 4-H youth. The appropriate calculation is:

$$\frac{\text{Number of youth from a given subpopulation (from Program families or non-Program families) at the end of the reporting period}}{\text{Total number of 4-H youth at the end of the reporting period}}$$

- 4-H youth per Program family. This measure indexes the relative concentration on the two components of EFNEP adult and 4-H youth. The formula is:

$$\frac{\text{Total number of 4-H youth at the end of the reporting period}}{\text{Program families at the end of the reporting period}}$$

Inclusion of External Information in Printout Processing

The EFNEP Reporting System currently works only with data reported to EFNEP on forms ES-255 and ES-256. While providing necessary and useful Program monitoring information, limiting printouts to analyses based on these data constrains their utility to some extent. The recommendations in this section suggest some forms of external information which might be employed to enhance the utility of the Reporting System.

- ✓ Consumer price index data. These data are available monthly from the Bureau of Labor Statistics. The information can be used to calculate constant-dollar family income and food expenditures, measures which are more useful for assessing targeting and level of food expenditure than current-dollar figures.
- ✓ Family size data, available quarterly from the Bureau of the Census. This information can be used to assess the size of Program families relative to national averages.
- ✓ Educational attainment data, available from the U. S. Bureau of the Census. This information can be used to compare the percentage of Program homemakers with a less than eighth grade education with educational attainment of citizens as a whole.
- ✓ Age distribution data, available from the U. S. Bureau of the Census, usable in determining the age distribution of Program homemakers relative to the distribution of ages in the United States as a whole.
- ✓ Racial/ethnic distribution data, available from the Bureau of the Census, useful in comparing the racial/ethnic distribution of EFNEP participants and staff with that of the United States as a whole.

Much of this information may not be available on the monthly basis which would be most convenient for incorporation into the EFNEP Reporting System. Interpolation and extrapolation of information that is available, however, would provide reasonable estimates of Program status and trends.

Incorporation of New Printouts

As discussed previously, current EFNEP printouts provide a wide variety of useful information for assessing Program status. Taken individually, however, the printouts currently produced provide little in the way of support to trend evaluation except raw data. Information must be extracted from printouts and separately listed, plotted, and subjected to trend analyses or inspection. Post hoc extraction and analysis of these data are, of course, possible, but require considerable personnel time and have the potential for error to which all hand calculations are prone. Since the data are at some point calculated digitally, it seems wasteful not to hold the trend information in digital form to support subsequent trend assessments.

Trend evaluation is a standard procedure in most management settings. The procedures involved need not be complex or unwieldy; the core requirement is a set of information arranged in a time series. Some relatively simple statistical procedures can aid in the process, but are not, strictly speaking, required. There should, however, be some mechanism for determining whether the organization, project, or program in question is improving or degrading in performance. EFNEP is no exception to this general rule. In the past, evaluation of Program trends have been carried out by EFNEP management, various USDA agencies, or outside contractors. In each case, trend illustration and analysis have required tedious extraction of data from printouts. Synectics believes that trend information can and should be a standard feature of the EFNEP Reporting System. This kind of information can be provided in two types of printouts:

- ✓ EFNEP Trend Listings in the same form as presented in Appendix C. This information can be held in a history file, updated at each reporting interval, and provided to EFNEP management with other printouts. Alternatively, the information could be held and updated until a printout of the information was required. Since the current number of past reporting intervals is relatively small, such a printout need not be particularly lengthy. Least squares regression analysis can provide useful information about the stability of the trend and the rate of change in the data, and should be updated each time a trend listing is produced.
- ✓ EFNEP Trend Charts. Graphical presentation of data is usually a more convenient form of summarization for management personnel than simple listings of measures at various time intervals. If plotting devices are linked to the Department of Agriculture computing system, high-quality trend illustrations can be produced on line printers (as is currently done for important EFNEP variables). It may be appropriate to limit charts produced to only the most important Program variables; the capability should exist, however, to produce trend charts from any set of trend data if required.

ANALYSIS OF EFNEP STUDIES

The purpose of this portion of the study was to evaluate the import and implications of studies conducted under the aegis of national EFNEP leadership. Three specific areas of concern were evaluated:

- ✓ Appropriateness of the design and conduct of national studies.
- ✓ Summary of the results of national studies.
- ✓ Suggestions for future research in areas not covered by existing national studies or investigable through data collected in the national Reporting System.

These issues are discussed in detail below.

Design and Conduct of National Studies

Synectics' review of national studies yielded no unambiguous instances of defective design or conduct of research. While some aspects of study concept and execution were perhaps not precisely as Synectics would have performed them, the extent of valid criticisms which can be leveled at particular studies are constrained by a number of factors, including:

- ✓ Real differences of opinions among researchers concerning suitability of procedures. Some research issues are subject to considerable debate. Some authorities question the utility of *ex post facto* research; other point to its value for identifying strong relationships and pointing to fruitful areas for more rigorous investigation. Critiques made along such lines would therefore reduce to a continuation of debates which instigate considerable controversies among leading research theoreticians and practitioners. Such debates are perhaps best left to more august arenas; if procedures are deemed acceptable by even a large minority of current practitioners, they are probably best left unchallenged.
- ✓ Uncertainty concerning financial and other resources of projects. In some cases, what appear to be questionable procedures may be the results of serious constraints on the resources of project staff. It is possible, for instance, to criticize many studies for failure to draw an adequate sample of subjects to permit drawing accurate assessments of group trends and/or differences. But the design may have been in response to externally imposed budget limitations. Similar arguments and counterarguments can be made with respect to issues such as: selection (or nonselection) of particular research issues; recontact of nonrespondents in survey studies; incorporation of multiple observation intervals, etc.

- ✓ Standard research precepts. Most statistical tests can be applied appropriately only if certain assumptions are met. F-tests (including analyses of variance), for instance, depend on assumptions of normality in the populations being examined. Regression analysis assumes both multivariate normality and homoscedasticity. Yet these assumptions are rarely attained in real-world research situations. But such procedures have also been known to be reasonably robust with respect to nonnormality and heteroscedasticity. To criticize such practices would be to criticize standard practice in social research.
- ✓ Lack of opportunity for rebuttal. This is perhaps the most telling constraint on study evaluations, since it is often impossible to query researchers on the details of their work. Such a dialog is necessary for fair critique in the current situation, since the appearance of specific criticisms in this document does not admit of a simple forum for rebuttal or rejoinder.

In any event, the national studies reviewed were of generally high quality. Research issues appear to have been chosen to bear on issues important to EFNEP, and results have been presented in ways which appropriately focus attention on both the strengths and weaknesses of the Program.

Perhaps the most important result of the evaluation of national studies is the opportunity to note what kinds of research have not been performed on a national scale. Observations of this sort can help point the way to future studies. Our discussion of candidate national studies focuses on:

1. Research issues which bear directly on issues which have been and continue to be important to national-level EFNEP leadership.
2. Studies which have not been performed on a national basis, or which were performed early in EFNEP history and thus could not reflect the impact of in-process policy modifications.

Candidate National-Scope Research Studies

Tracking Individual Homemakers through Program. In this study, the food behaviors of individual homemakers would be tracked through the course of their participation in EFNEP. The 24-Hour Food Recall can be employed as the criterion measure, though this might be supplemented by knowledge measures as described in subsequent research suggestions. For maximum study validity and utility, the following research procedures should be observed:

1. Homemakers entering the Program should be included in the study by random selection. Costs of training on-site personnel in data collection may be reduced by preselecting a random sample of EFNEP administrative units, though it should be recognized that such cluster or area sampling procedures will increase the sample size required for particular level of precision in parameter estimation.
2. To yield usable results, this study should plan on tracking Program homemakers for a minimum of two years. This kind of research should be initiated, therefore, only if the agency or organization has sufficient resources and personnel to carry out the study.
3. If possible, study participant food behavior should be evaluated at standardized and regular intervals (e.g., every six months). While the six month data collection interval is currently specified in EFNEP, the interval varies somewhat in actual practice. More rigorous control of the data collection interval is advisable. Arguments can be made for a more frequent data collection interval, but the benefits of such strategies must be carefully weighed against the potential for invalidity engendered by deviation from standard EFNEP procedures.
4. Homemakers included in the study should receive comparable amounts of instruction during EFNEP participation (unless, of course, the study seeks to investigate the effects of number of sessions and/or instruction time as well as time in the Program).
5. The disposition as "fate" of the homemakers should be tracked, and criterion and demographic data for the separate groups analyzed separately. Categories of homemakers by disposition type should include at least the following:
 - a. Remaining in EFNEP as of the end of the study.
 - b. Graduated from EFNEP as a result of high performance.
 - c. Dropped from EFNEP because of lack of performance or educational satiation.
 - d. Left EFNEP on own volition (reasons for leaving should be ascertained, if possible, be ascertained).
 - e. Moved.
6. Required sample sizes will be primarily a function of study objectives and the degree of precision required. The sample size should accommodate to the likely differences in disposition group sizes. The sample size should thus be sufficient to permit an adequate estimate of characteristics of even the smallest disposition group.

This type of research is, of course, expensive to initiate and perform on a national basis. It does, however, provide extremely useful information on the nature and extent of EFNEP family progress through the Program. A comprehensive picture of such progress might be gained by developing a single study design which could be implemented by a number of States simultaneously. Alternatively, tracking procedures could be included in the national EFNEP Reporting System.

Comparison of EFNEP Homemakers with Middle-Class Homemakers. It is difficult to evaluate the nutritional status of EFNEP homemakers with respect to that of the nation as a whole because similar measures of performance are rarely applied to both low-income and middle-class populations. The structure of Extension provides a mechanism by which such a comparison might be profitably accomplished. Samples of both EFNEP participants and middle-class homemakers involved with Extension could be drawn, and the progress (or lack thereof) of each group tracked over time. Both knowledge and food behavior measures are suggested here, since it would be interesting to gain some information as to whether differences in food behaviors between the two groups are due to disparity in knowledge or to disparity in resources (i.e., money, transportation, etc.). The use of homemakers associated with Extension is suggested only because they may be easier to contact than members of the general population and they may be more willing to participate on such a study. A more powerful design would attempt to identify and sample members of the middle-class population in general. This would avoid the danger of including homemakers who have become attuned to and expert in nutrition and nutrition-related topics by virtue of their association with Extension.

Employment of Knowledge Measures in EFNEP. The use of knowledge measures by EFNEP is attractive for two primary reasons:

1. It is possible that nutritional behaviors of Program homemakers are resource-bound rather than knowledge-bound. That is, the kinds of food served by homemakers may be determined in part by a lack of family resources (e.g., money, transportation, cooking facilities). Application of knowledge measure would indicate the extent to which EFNEP is preparing its participating homemakers for more adequate diets if and when more adequate resources become available.
2. The 24-Hour Food Recall may not provide a pure behavioral measure. It is conceivable, for instance, that some homemakers modify their reports of food servings to reflect what they think should be served. To the extent that this phenomenon occurs, it reflects knowledge rather than behavior.

Knowledge measures can probably be best developed in a pilot effort using a relatively small sample of homemakers exposed to a relatively large number of knowledge items. Item analysis can then be used to select items which differentiate high scorers from low scorers. It will probably be appropriate to use different sorts of knowledge questions at different food recall intervals.

Employment of Follow-up Knowledge Measures. Assuming that there is continuous turnover in the poverty population, it will be useful to know to what extent graduates of EFNEP retain the knowledge gained in their association with EFNEP. Ideally, these knowledge measures should be derived from homemakers from whom knowledge measures were obtained while they were still participating in the Program. One potential problem in this kind of research is the difficulty of obtaining follow-up measures on families who no longer have any formal association with EFNEP. It could be, for instance, that more upwardly mobile families might tend to move more often and thus be harder to track down than families who tend to remain in a particular socioeconomic stratum. If these type of families differ in their capacity to retain information, the results of the follow-up could be significantly biased. If this kind of research is performed, therefore, it is imperative that nontrivial attempts to contact EFNEP graduates be made. This might involve significant field work in locating and interviewing appropriate families.

Program Youth Knowledge and Food Behaviors. The paucity of information on nutritional status, behavior, and knowledge of youth involved in the youth component of EFNEP argues for special studies to investigate these issues. Since youth may be somewhat more difficult to locate and maintain contact with than adults, more aggressive data collection strategies may be required for a particular study design than would be the case with Program homemakers.

Employment of Follow-up Measures on Youth Nutritional Behaviors and Knowledge. The rationale for this kind of study is similar to that for the analogous investigations of Program homemakers. Since today's youth will form the families of tomorrow, indications that youth are absorbing and retaining the nutritional information imparted in their association with EFNEP will augur well for the continuing impact of the Program.

Follow-up of Aide Characteristics. The employment of indigenous Aides in the EFNEP has the potential for positively impacting on the lives and futures of the Aides themselves. Aides often use the positions as introductions to the "world of work," going on to more lucrative careers after having served as Program Aides for some time. Since many of the Aides are drawn from the same population as the EFNEP clientele, positive impacts on the lives of the Aides represent real societal benefit. It would be interesting, for instance, to examine the role of EFNEP in influencing Aides in the transition from welfare reciprocity to gainful employment. While Aide turnover as a result of Aides leaving to take better jobs is a continuing source of difficulty to EFNEP itself (in that the better, more productive Aides are the most likely to leave) such a situation can be viewed as a tangible benefit of the Program. Research on such impacts will necessitate collecting information on previous occupational status of Aides, extent of welfare or other social aid reciprocity of Aides prior to joining EFNEP, and current occupation and income of the Aides.

Relative Effectiveness of Individual Versus Group Instruction. In some settings (such as innercity units) group instruction can represent an attractive alternative to individual instruction, at least as far as costs of the Program for individuals are concerned. The effectiveness of such strategies has, however, been called into question by previous research. A potentially worthwhile study would involve development of instructional

materials specifically tailored to group settings (but based on the core educational materials already developed by or for EFNEP) to ascertain the extent to which valuable Program resources could be conserved by using lower-cost instructional strategems. A countrywide Program of curriculum development and research, with different agencies employing different instructional assumptions and materials, could provide a basis for selecting the most appropriate methods for conducting group sessions. Ideally, homemakers interested in participating in the Program would be randomly assigned to either individual or group settings; it is anticipated, however, that significant self-selection may take place because some homemakers will be unwilling or unable to attend group meetings while others will prefer the "club" atmosphere of the groups. In the interest of "clean" research, this self-selection should be kept to a minimum, though it is recognized that it will be difficult to eliminate completely.

Follow-up on People Leaving the Program for Reasons Other Than Graduation.

Considerable investment is made by EFNEP in identifying, contacting, and initiating work with Program homemakers. It will be useful, therefore, to identify reasons why homemakers leave the Program before their food behavior scores and the instructional materials which they have covered indicate that graduation is warranted. Understanding the reasons for homemakers leaving the Program may help EFNEP administrators design Aide training and EFNEP materials to induce maximum numbers of homemakers to remain with the Program for a useful period of time. Again, there may be problems with locating ex-homemakers who have moved away from the unit site.

Study of Reasons for Nonparticipation. In this type of research, an attempt would be made to ascertain why certain families who cannot or will not participate in the EFNEP refuse such participation. Data would be collected from the families contacted by Program Aides who decline involvement in EFNEP. One would anticipate that nonparticipants might be less sociable, more suspicious, and less communicative than the homemakers who would end up participating in the Program; thus some method of inducing them to answer questions might be necessary. (This may not be true, of course, for homemakers with legitimate reasons for nonparticipation in the Program, such as employment.) The use of small honoraria might be useful in inducing non-participants to answer questions about:

1. Reasons for nonparticipation.
2. Family background and demographic data.
3. Family income.
4. Food behaviors.
5. Nutrition knowledge.

The data obtained from such a study could be compared with similar data from homemakers who agreed to participate in the Program, thus giving EFNEP information on the characteristics of a subpopulation which EFNEP has not been working with. This comparison could be made in either an informal or experimental sense. Such a study might be particularly useful if it is intended that the characteristics of EFNEP be changed dramatically (e.g., inclusion

of a mass media component). The information gained could be used to attempt to "target" the new aspects of the Program toward the kinds of homemakers who would not participate in the traditional EFNEP setting.

Study of Characteristics of Nonparticipating Families. Unlike people who refuse to participate at all in EFNEP, nonparticipating families as reported in the EFNEP Reporting System may constitute a significant drain on EFNEP resources. An understanding of the composition of this group may help EFNEP deal more effectively with the problem. The study would include an investigation of issues such as:

1. Association of the nonparticipating family with the EFNEP (e.g., graduated homemaker, dropped homemaker, friend of Aide, relative of Aide, community leader, etc).
2. Reasons for nonparticipation if eligible.
3. Length of time of informal association with EFNEP.
4. Amount of time per month spent with EFNEP Aide(s).

Identification of patterns of nonparticipation might help EFNEP administration to formulate strategies for involving nonparticipating families with the Program in more productive roles (e.g., inducing such homemakers to become Volunteers), or to evolve more highly targeted and effective strategies for reducing the amount of Aide time spent with nonparticipating families (e.g., creation of a statewide newsletter for EFNEP graduates, establishment of periodic group sessions for graduates and other parties interested in EFNEP but not eligible for formal participation in the Program).

Study of Aide Effectiveness. As is the case in most jobs, some Aides are more effective and efficient than others; While some of the variation in Aide performance is undoubtedly due to individual differences in the Aides themselves. Some of the variation, however, may be accounted for by behavior patterns which the Aide has evolved in the course of EFNEP activities. To the extent that such behavior or working patterns can be identified and worked into Aide training, benefits of individual discoveries or habit patterns can be disseminated to other Aides, thus making the Program as a whole more effective.

Detailed Study of Food Stamp Recipients and Non-Food Stamp Recipients. While national Reporting System ES-256 data have been separated by food stamp reciprocity since March 1977, the categorization is not without some conceptual problems. Since data are provided only for a single month, it is impossible to differentiate between families who are long term food stamp recipients and those which began to receive them only recently. Likewise, families classified as not receiving food stamps may have only recently stopped receiving them. There is the possibility, therefore, the effects of the interaction between long-term food stamp reciprocity and EFNEP participation may be difficult to analyze because of these "crossovers." An investigation of the history of EFNEP families classified with respect to food stamp reciprocity would yield information on the extent of participation (length of participation, level of assistance). Comparison with local, State, regional, and national data on food stamp recipients can then be made to

ascertain whether EFNEP participants are representative of food stamp recipients as a whole. This study could also be used to redefine EFNEP food stamp reciprocity classification procedures.

If EFNEP recipients receiving food stamps are not representative of food stamp recipients as a whole, a more ambitious study may be warranted. A detailed field investigation tracking those EFNEP participants who receive food stamps and those who do not may be warranted. In such a study, length and level of food stamp reciprocity can be included as a design variable.

Validation of Food Recall Data. One of the continuing difficulties in analyzing and interpreting EFNEP behavior change data is the nature of the food recall data themselves. Diet estimates based on the 24-Hour Food Recall are subject to at least four sources of potential invalidity:

1. Instability of diet patterns. It is highly probable that few Americans eat a completely balanced diet each day. On any given day, diet may be influenced by factors such as: illness; available food; family commitments and plans; parties; and other random factors. While Program Aides attempt to avoid collecting data which they know to be invalid for any of the above reasons, feasible policy guidelines cannot hope to eliminate all such sources of invalidity.
2. Memory imperfection. If homemakers do not know when they are to complete a 24-Hour Food Recall, they may find it difficult to remember exactly what was served the previous day.
3. Aide intervention. Aides have a vested interest in the success of the Program. They are therefore subject to either conscious or unconscious enhancements of reported homemakers' diets as they are completing the food records.
4. Serving size variation. Actual nutrition intake is dependent on size of servings as well as the nature of foods consumed. In a group of homemakers, nutrient intake variability caused by differences in serving size can be expected to cancel out. There may, however, be an interaction between this potential source of invalidity and the Aide intervention problem discussed above.

There is no practical, economical method to control for all of these potential sources of invalidity. There are, however, some techniques which can be used to help assess the validity of the 24-Hour Food Recall.

1. Biochemical assay data, using laboratory procedures to assess dietary adequacy, may well be in theory the best source of dietary adequacy. The data are, however, difficult and expensive to collect. They would, moreover, require substantial cooperation on the part of EFNEP participants. Except on a very limited scale, this technique may well be of little value on validating food recall validity.

2. Data collection by non-EFNEP personnel. Collection of food behavior data by personnel not directly connected with the Program would eliminate the Aide intervention problem. Development of a probing interview technique might also reduce the invalidity due to sample size variation.
3. Use of food diaries. The use of food diaries would involve Program homemakers keeping track of meals for a week or so. The average daily servings thus determined should be more stable than single day food consumption reports.
4. Food recalls by family members other than the homemaker. This technique can serve as a validity check by assessing the extent to which family members agree on what was served during the previous day.

Any or all of these techniques could be combined in a study specifically designed to assess food recall validity and true homemaker diet patterns.

APPENDIX A: EFNEP TREND CHARTS

Percent

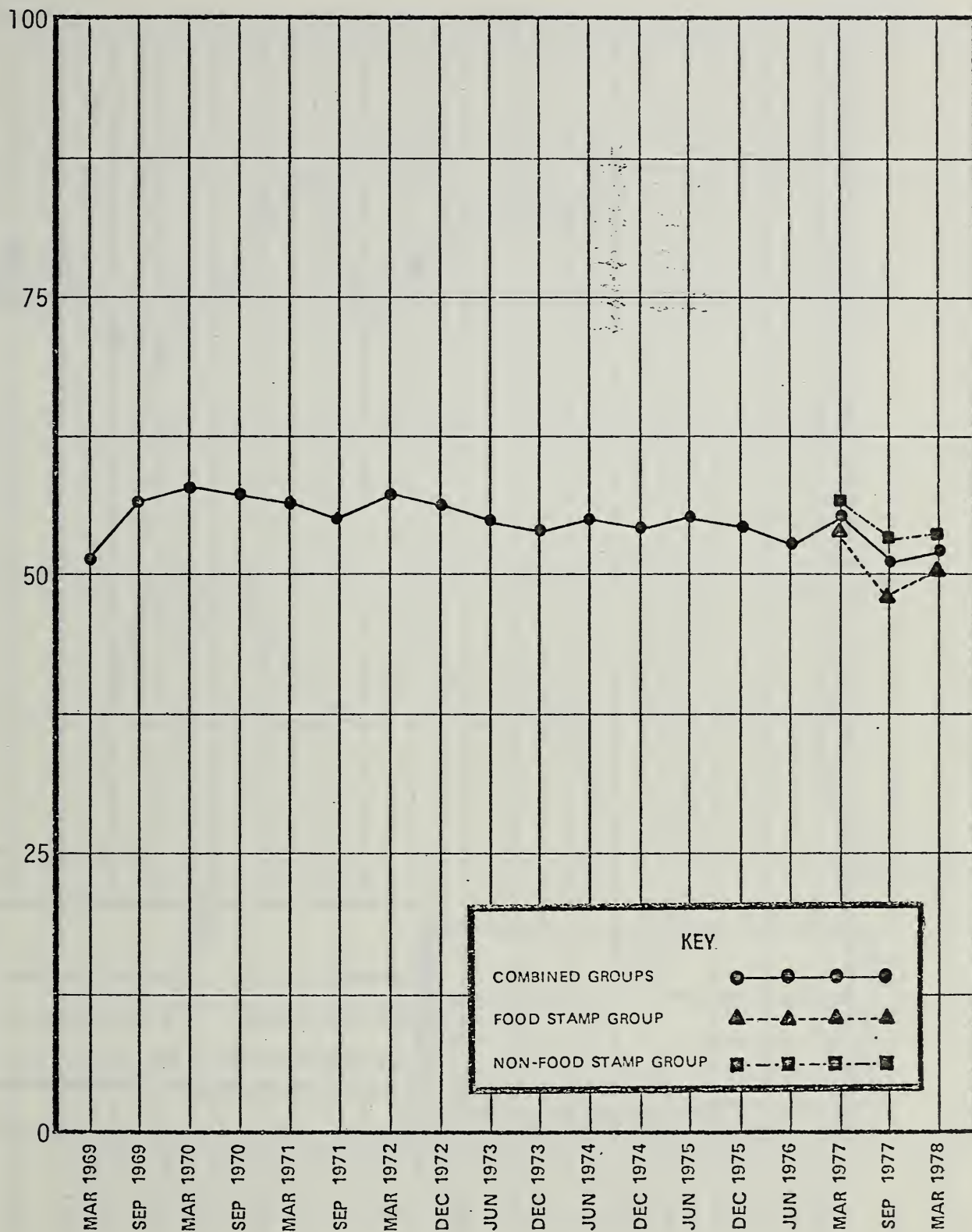


Figure 2: Percentage of Homeakers Reporting Minimum Diets on Food Recall #1

Percent

100

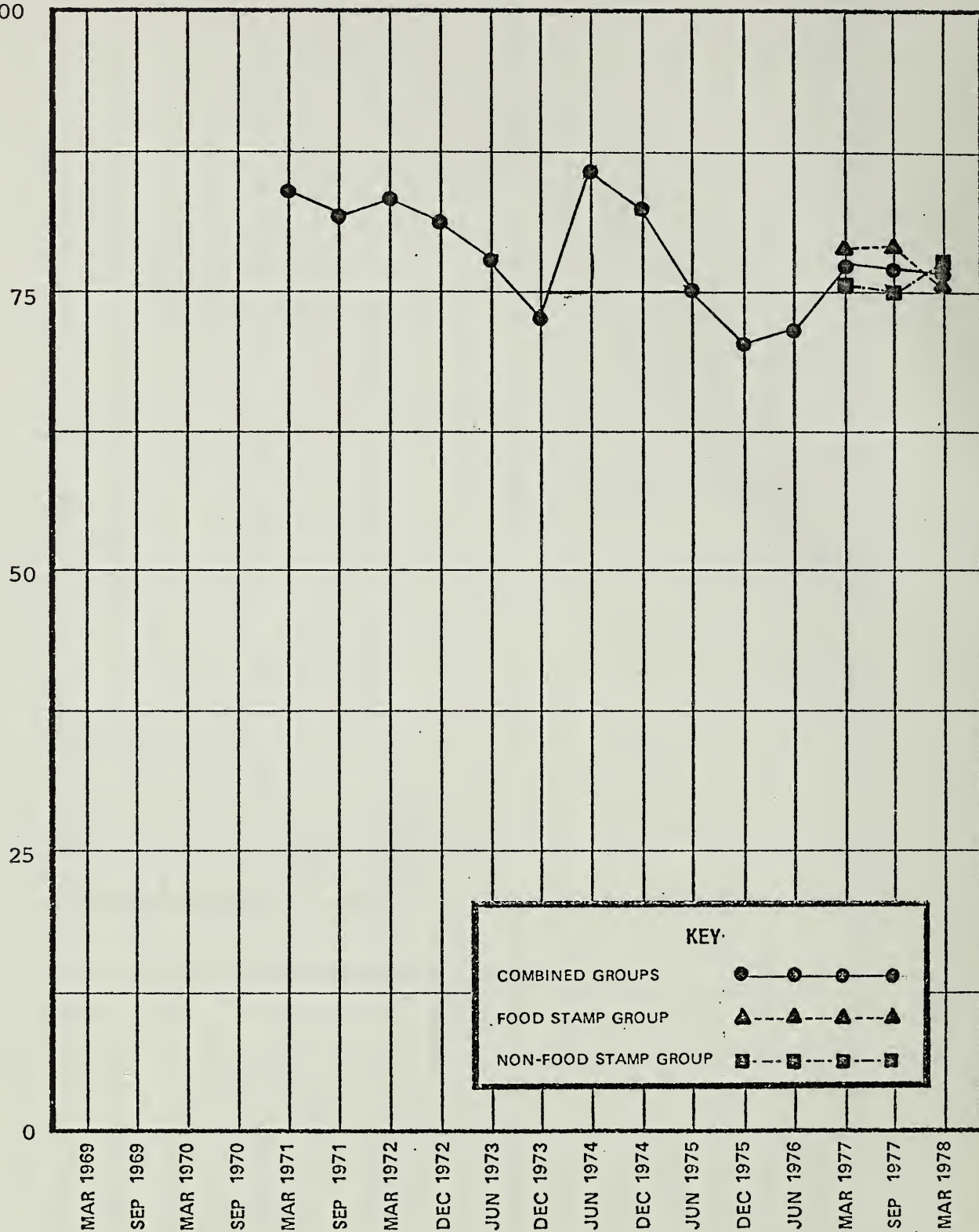


Figure 3: Percentage of Homemakers Reporting Minimum Diets after 24 Months of Program Participation

Percent

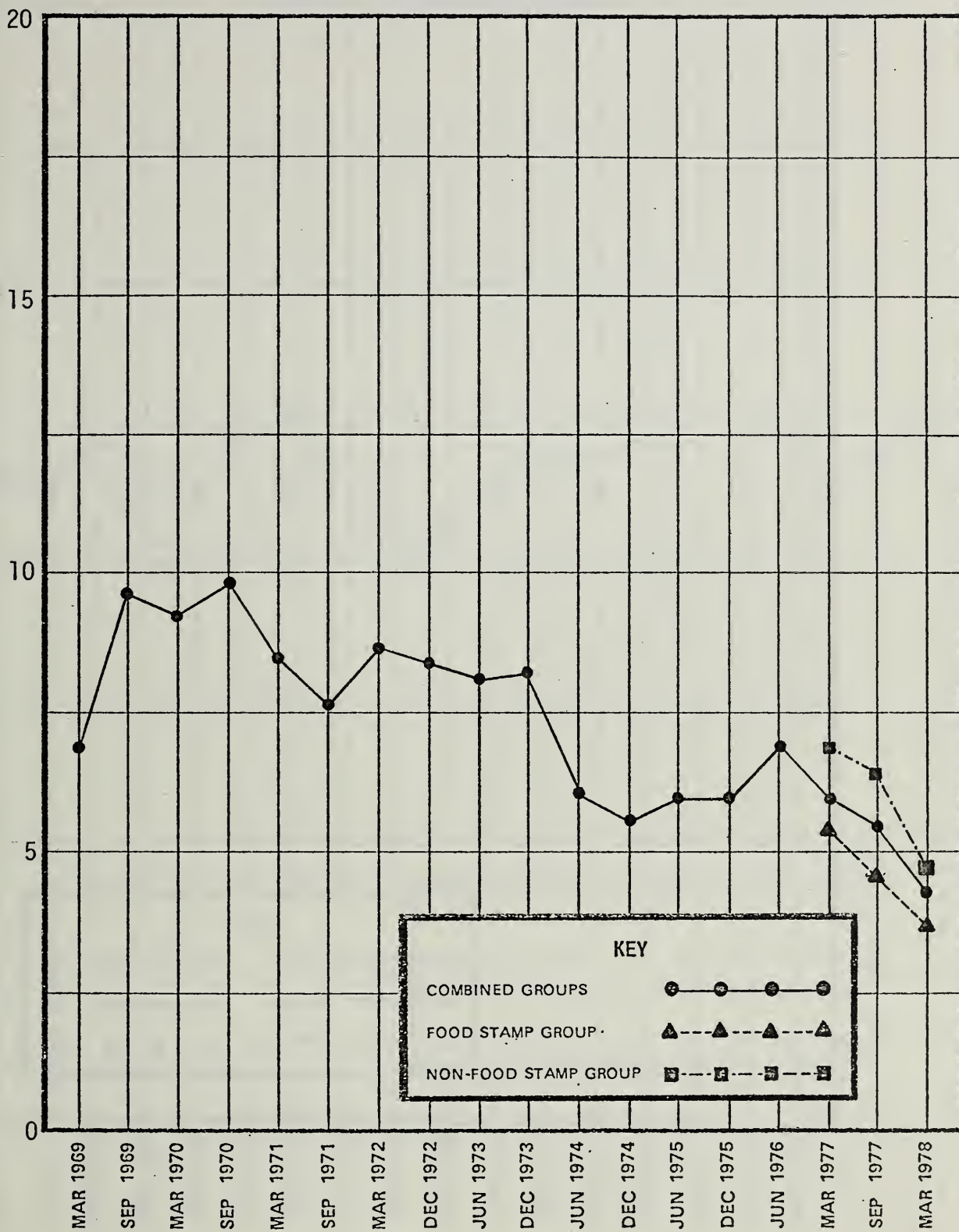


Figure 4: Percentage of Homemakers Reporting Adequate Diets on Food Recall #1

Percent

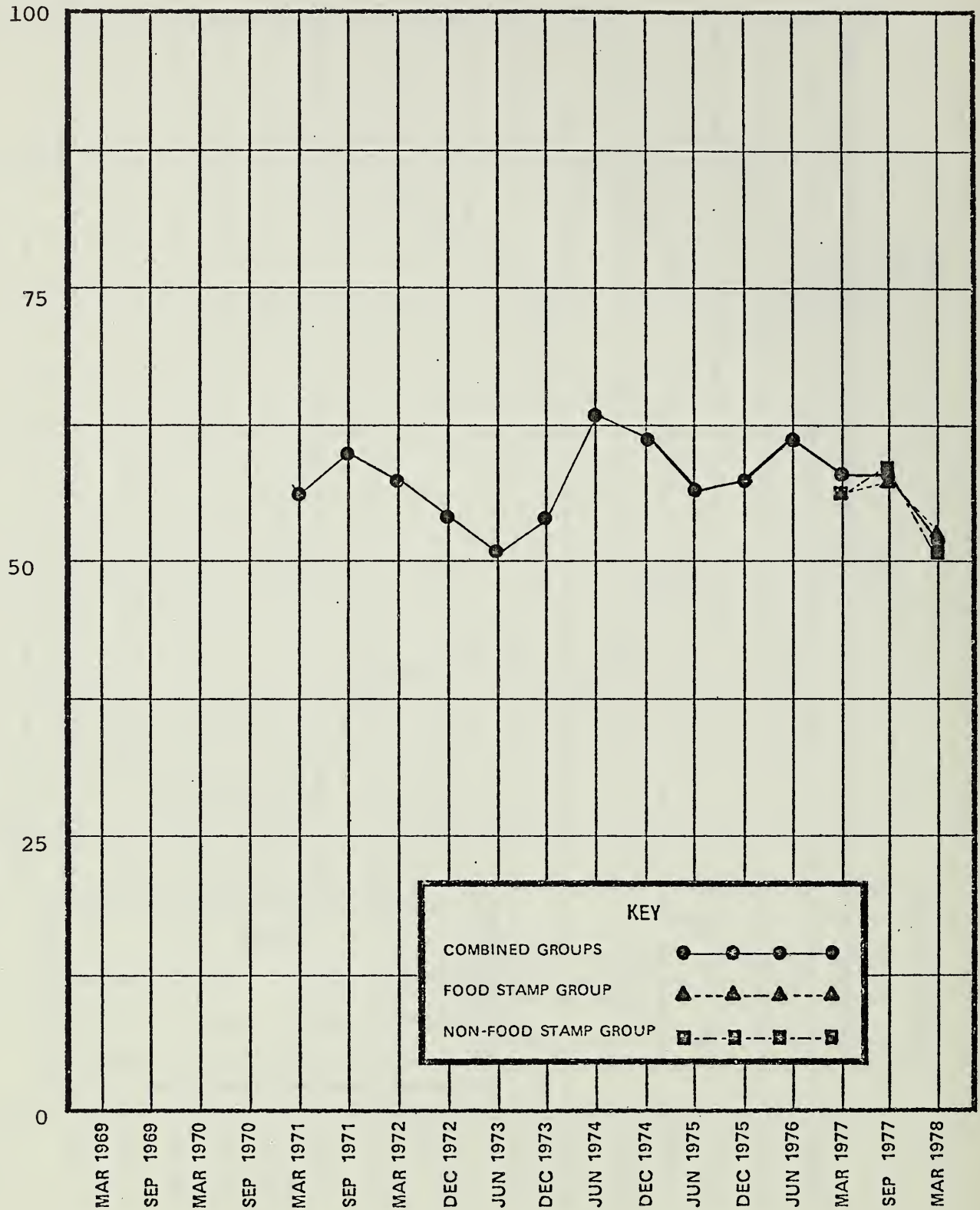


Figure 5: Percentage of Homemakers Reporting Adequate Diets after 24 Months of Program Participation

Percent

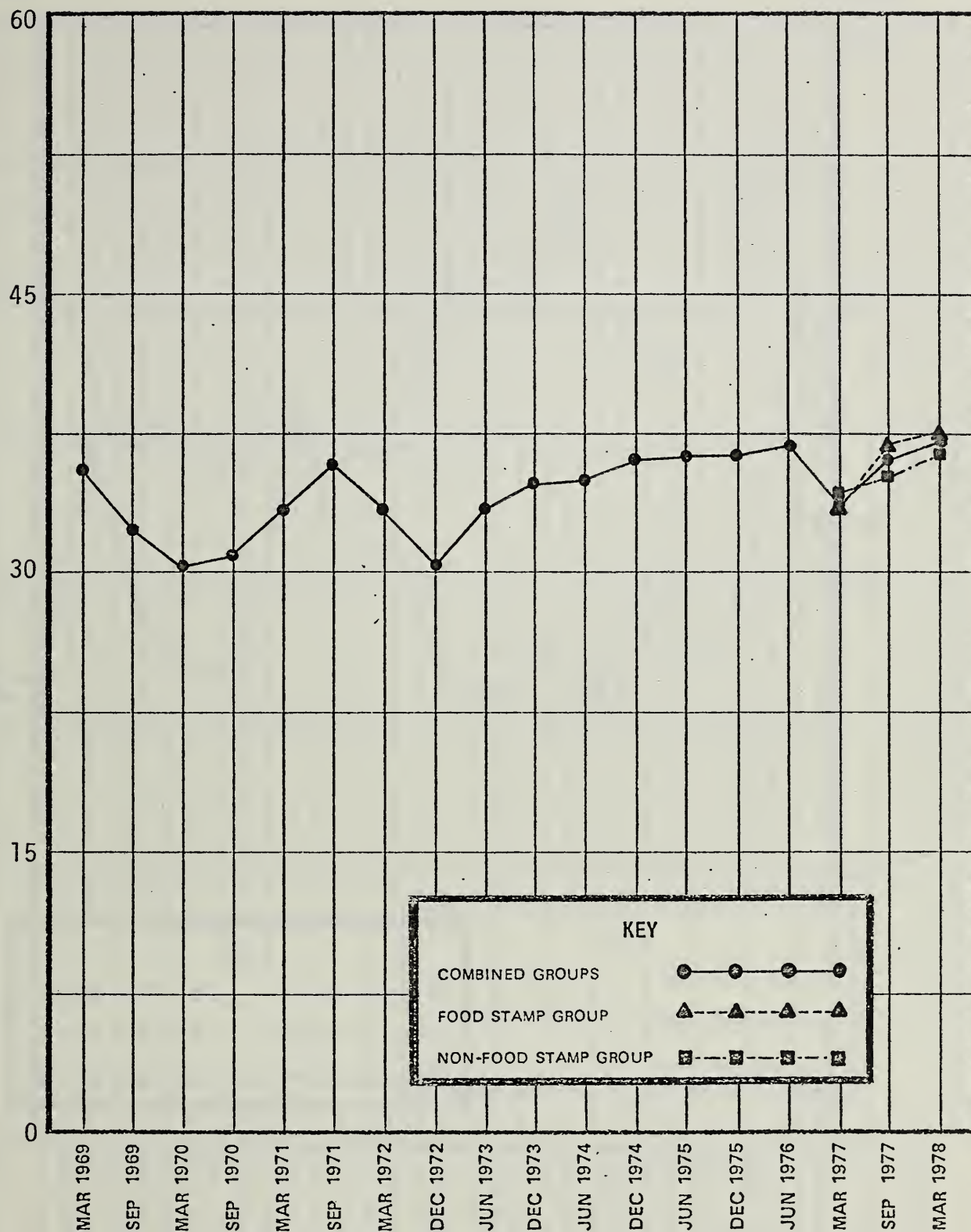


Figure 6: Percentage of Program Homemakers Reporting No Servings of Milk at Program Entry

Percent

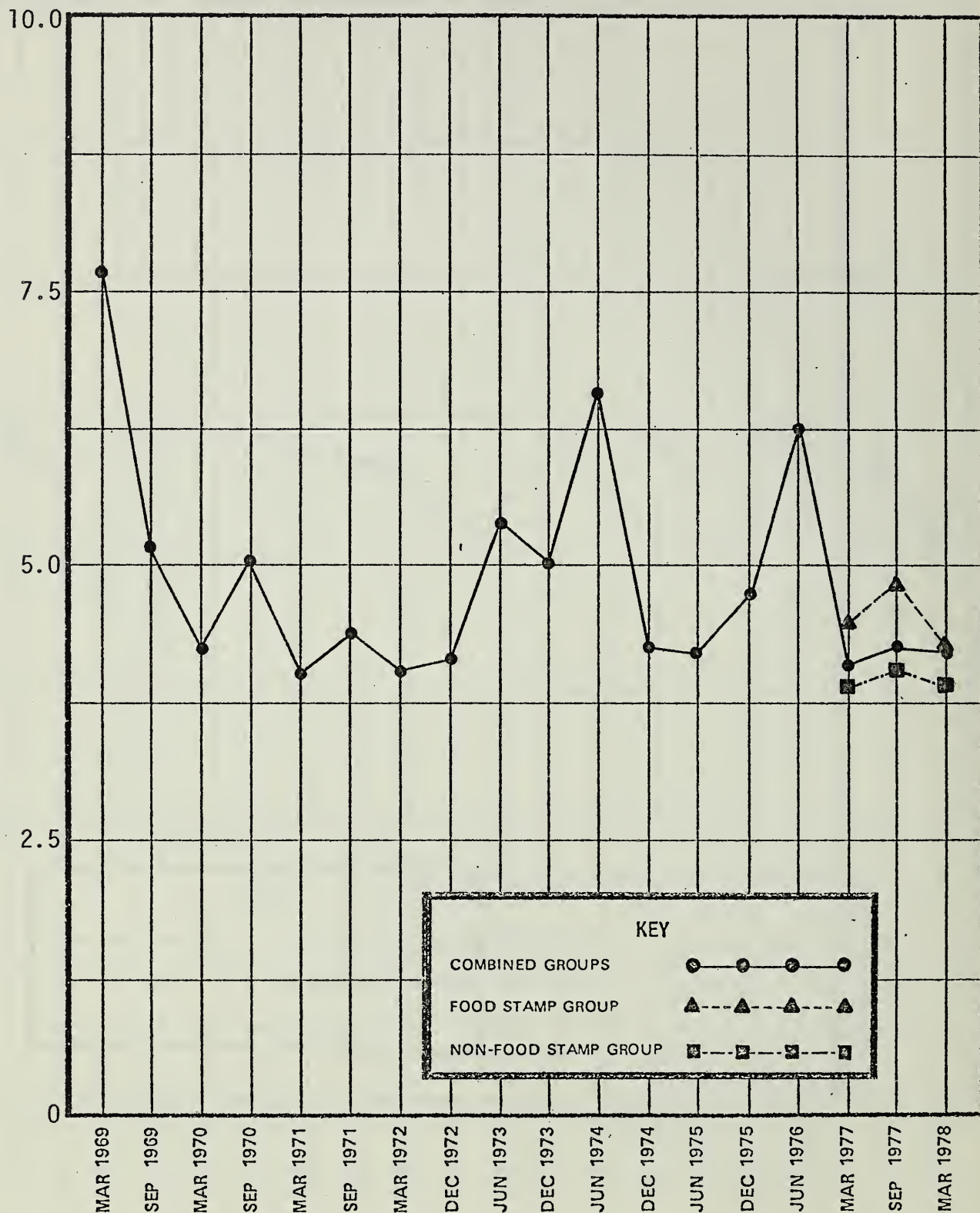


Figure 7: Percentage of Program Homemakers Reporting No Servings of Meat at Program Entry

Percent

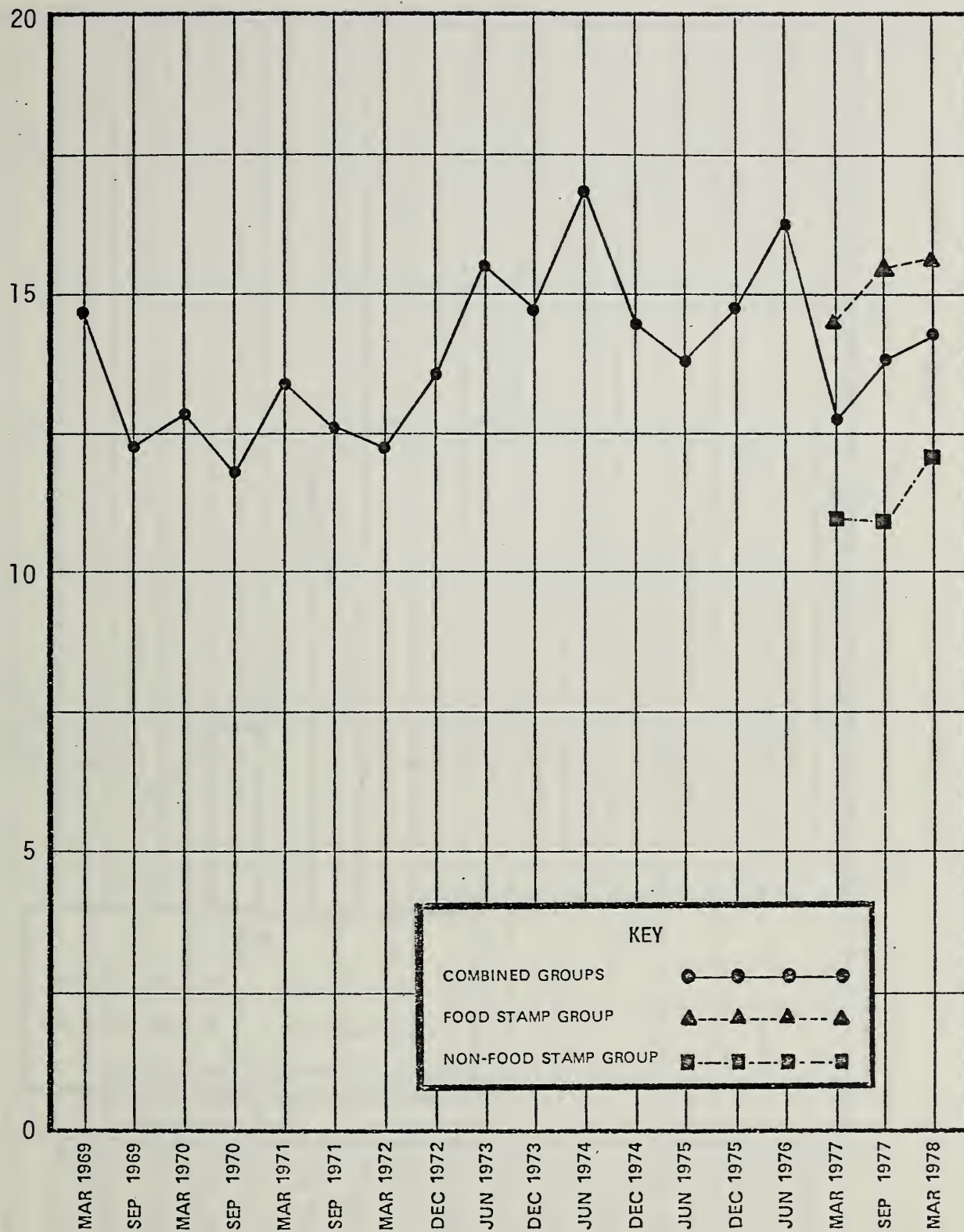


Figure 8: Percentage of Program Homemakers Reporting No Servings of Vegetables and Fruits at Program Entry

Percent

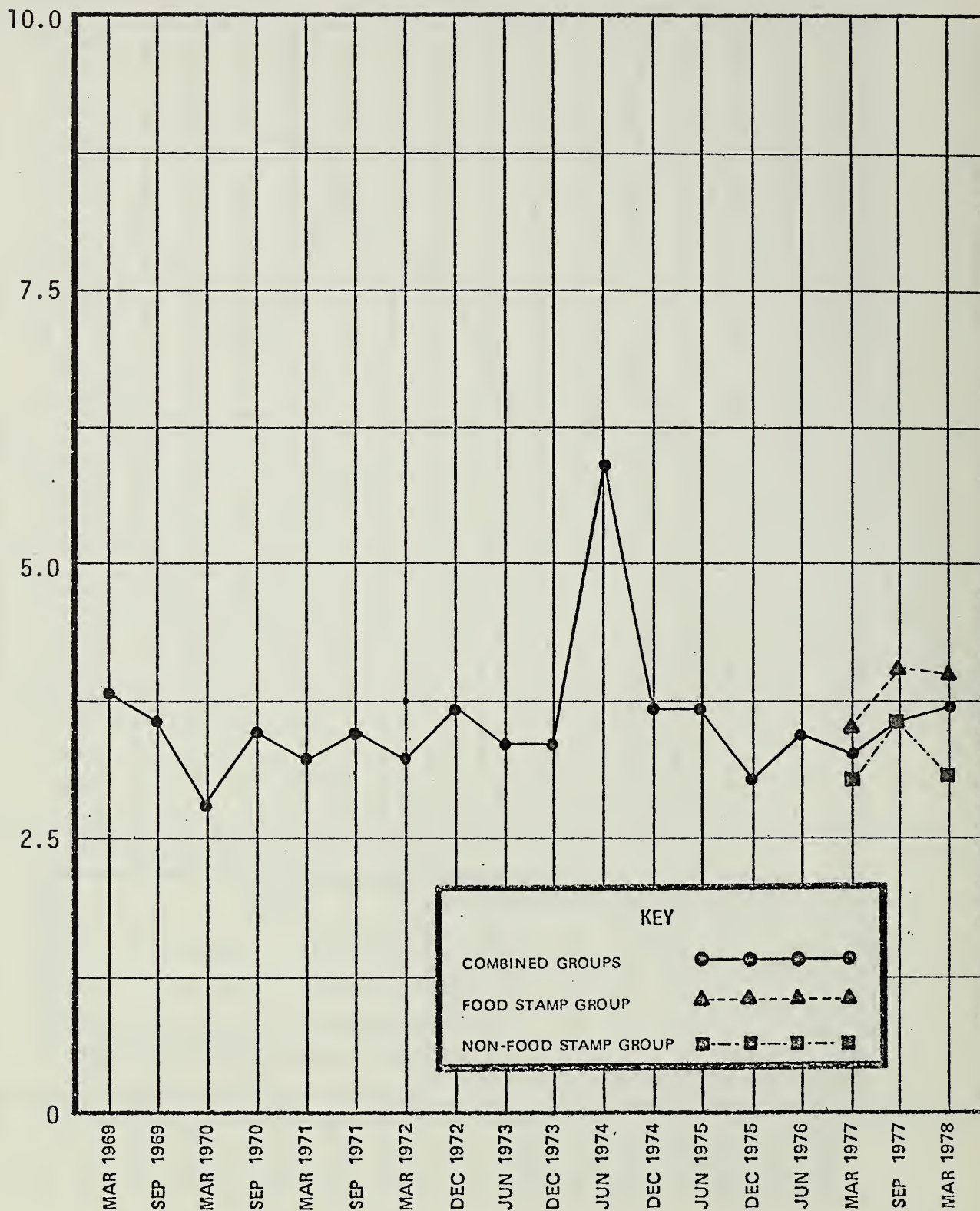


Figure 9: Percentage of Program Homemakers Reporting No Servings of Breads and Cereals at Program Entry

Percent

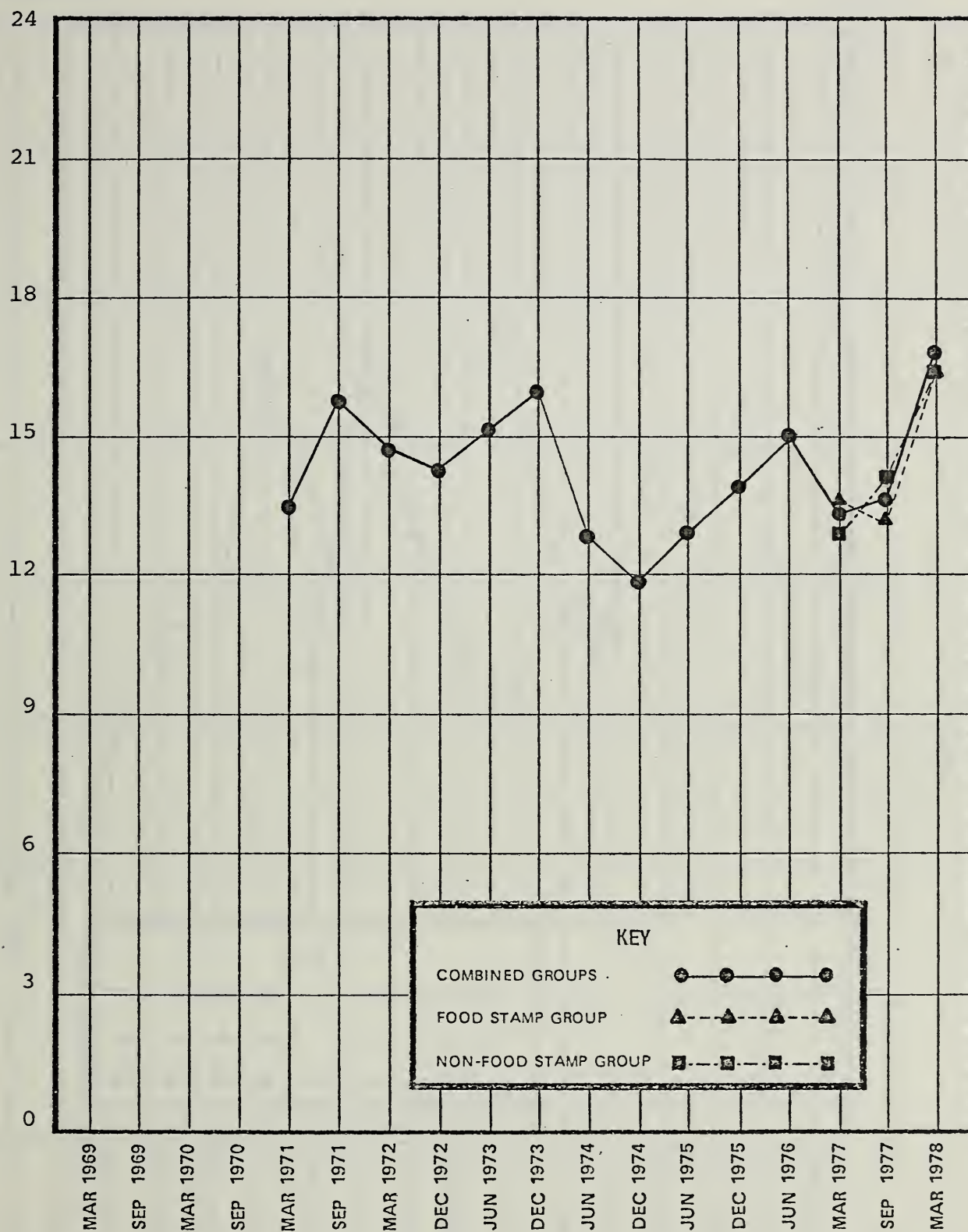


Figure 10: Percentage of Homemakers Reporting No Servings of Milk after 24 Months of Program Participation

Percent

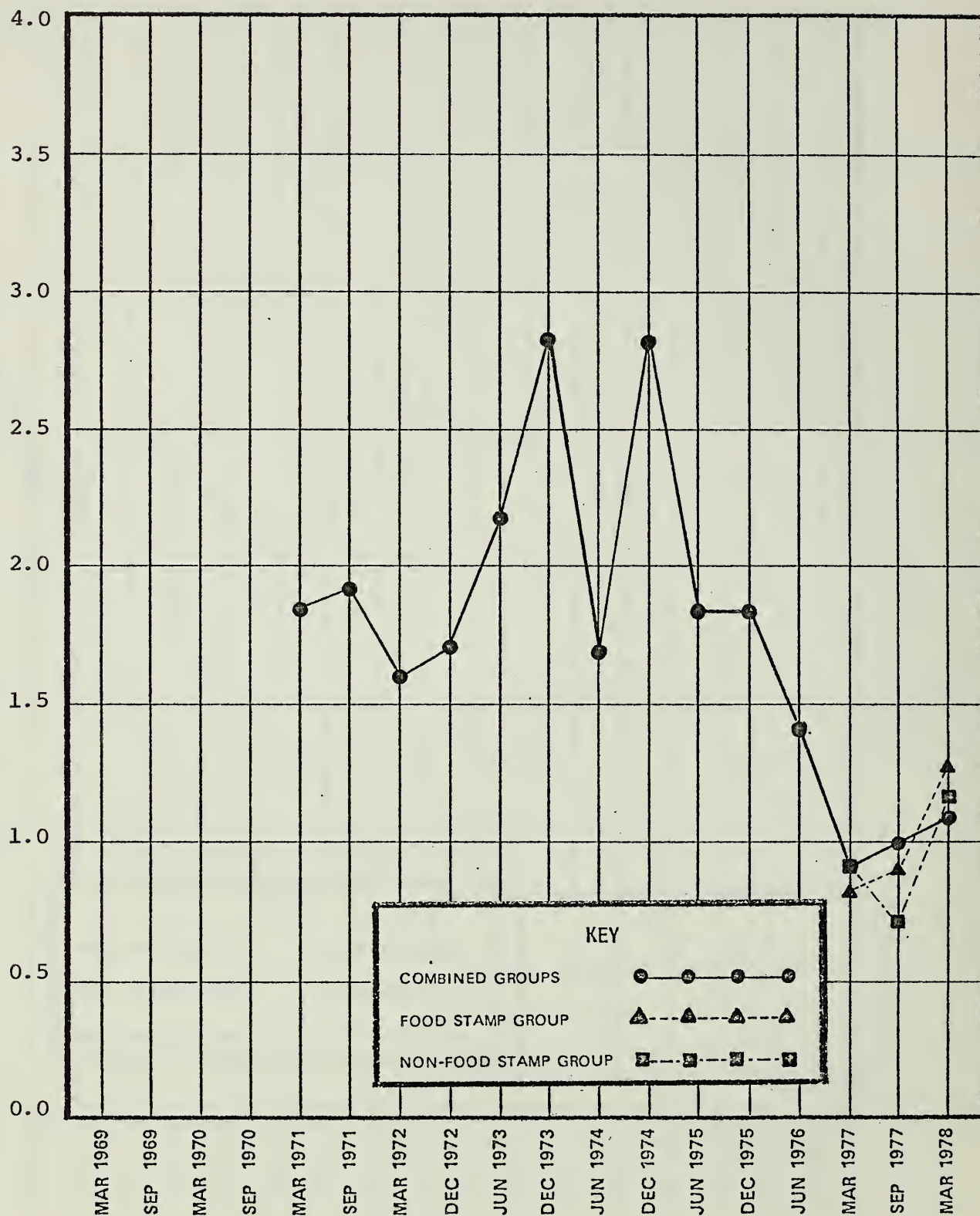


Figure 11: Percentage of Homemakers Reporting No Servings of Meat after 24 Months of Program Participation

Percent

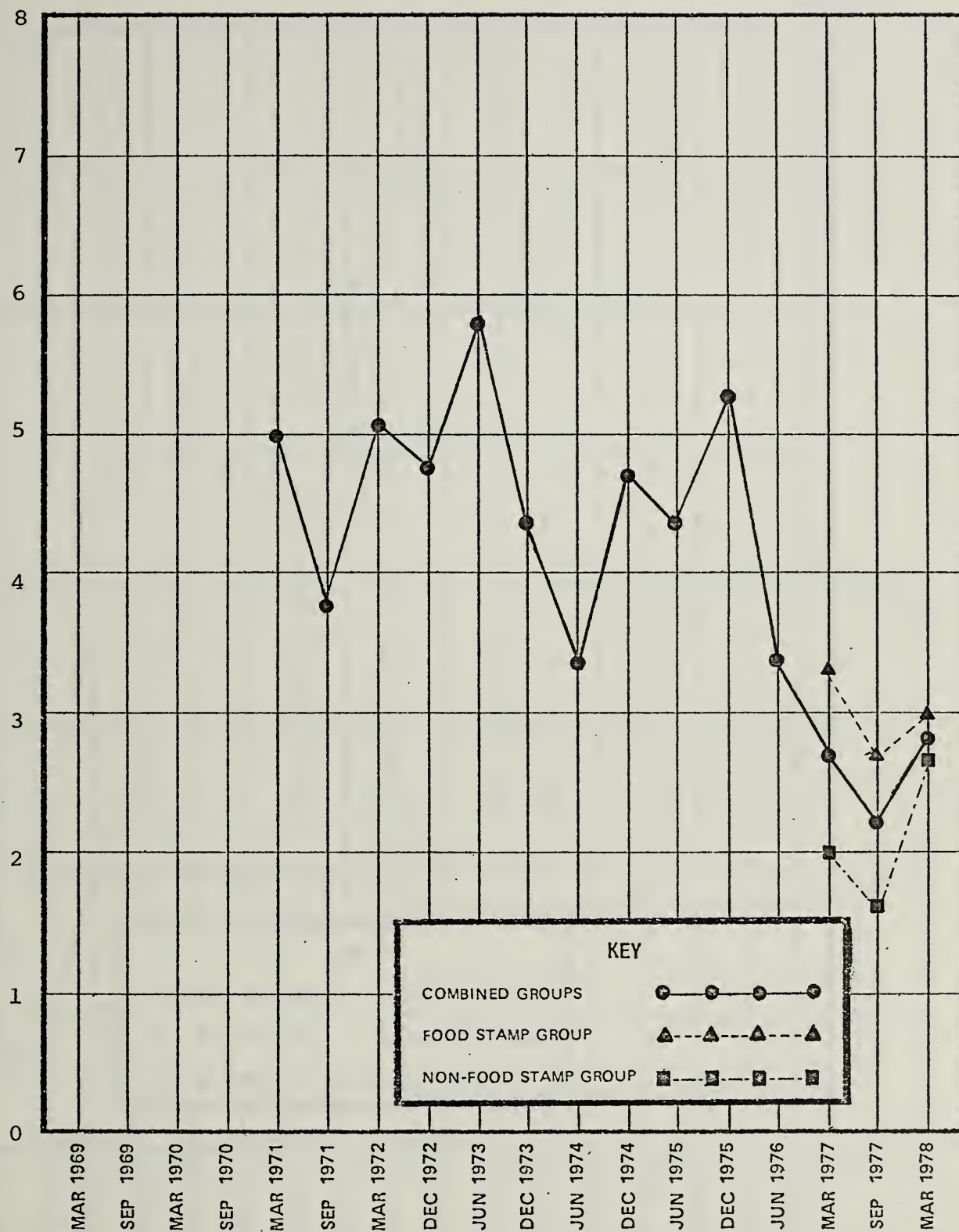


Figure 12: Percentage of Homemakers Reporting No Servings of Vegetables and Fruits after 24 Months of Program Participation

Percent

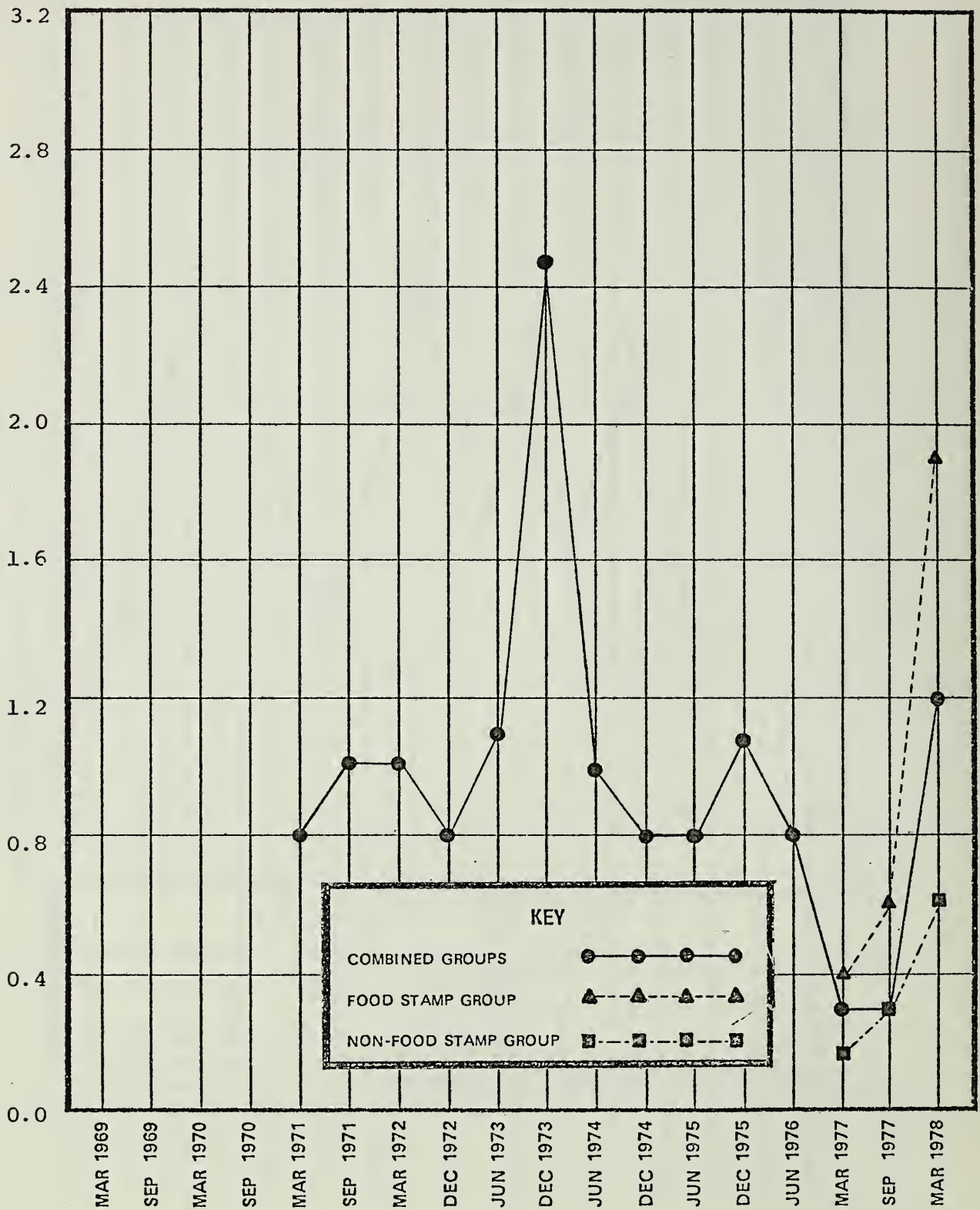


Figure 13: Percentage of Homemakers Reporting No Servings of Breads and Cereals After 24 Months of Program Participation

Percent

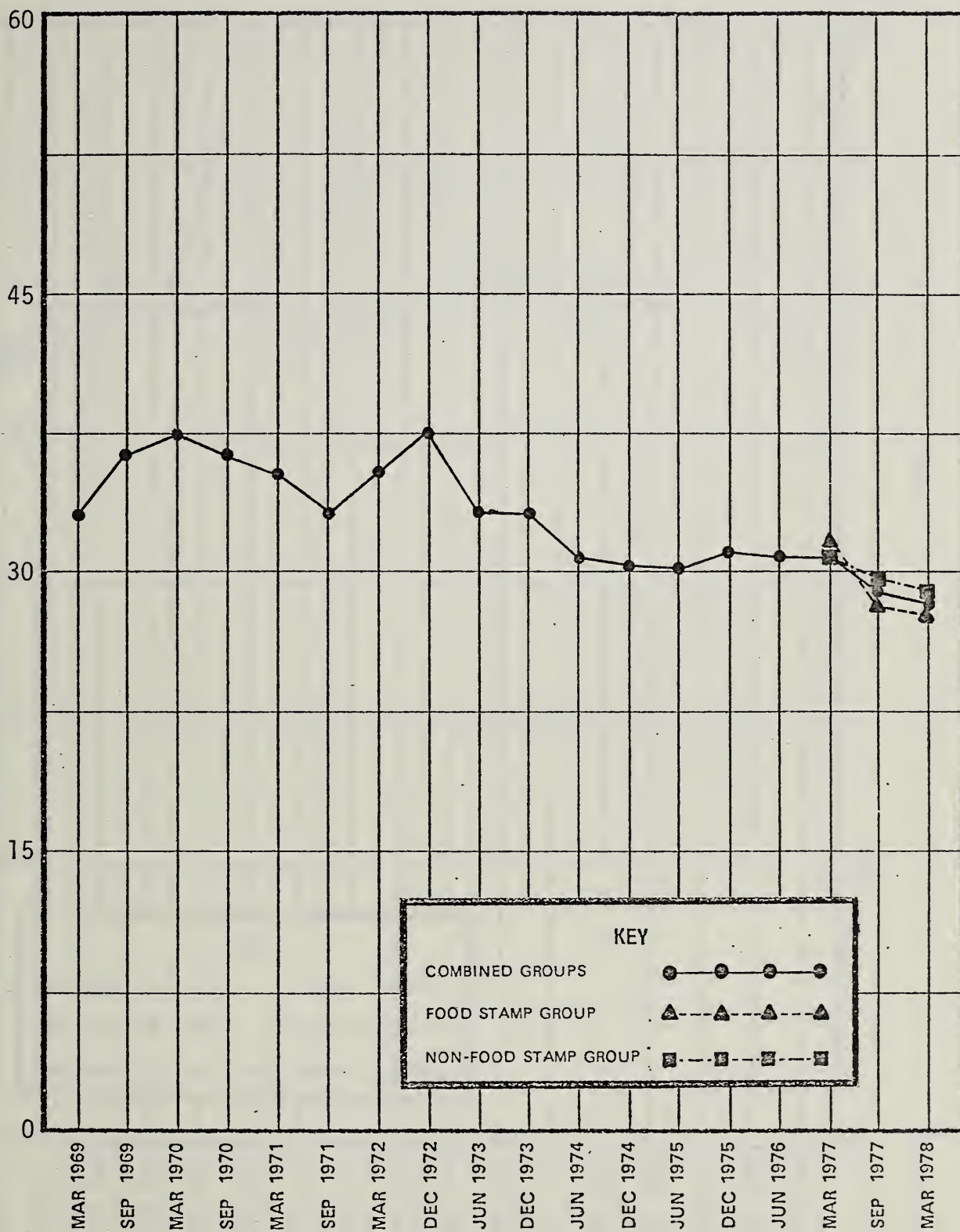


Figure 14: Percentage of Program Homemakers Reporting 2 or More Servings of Milk at Program Entry

Percent

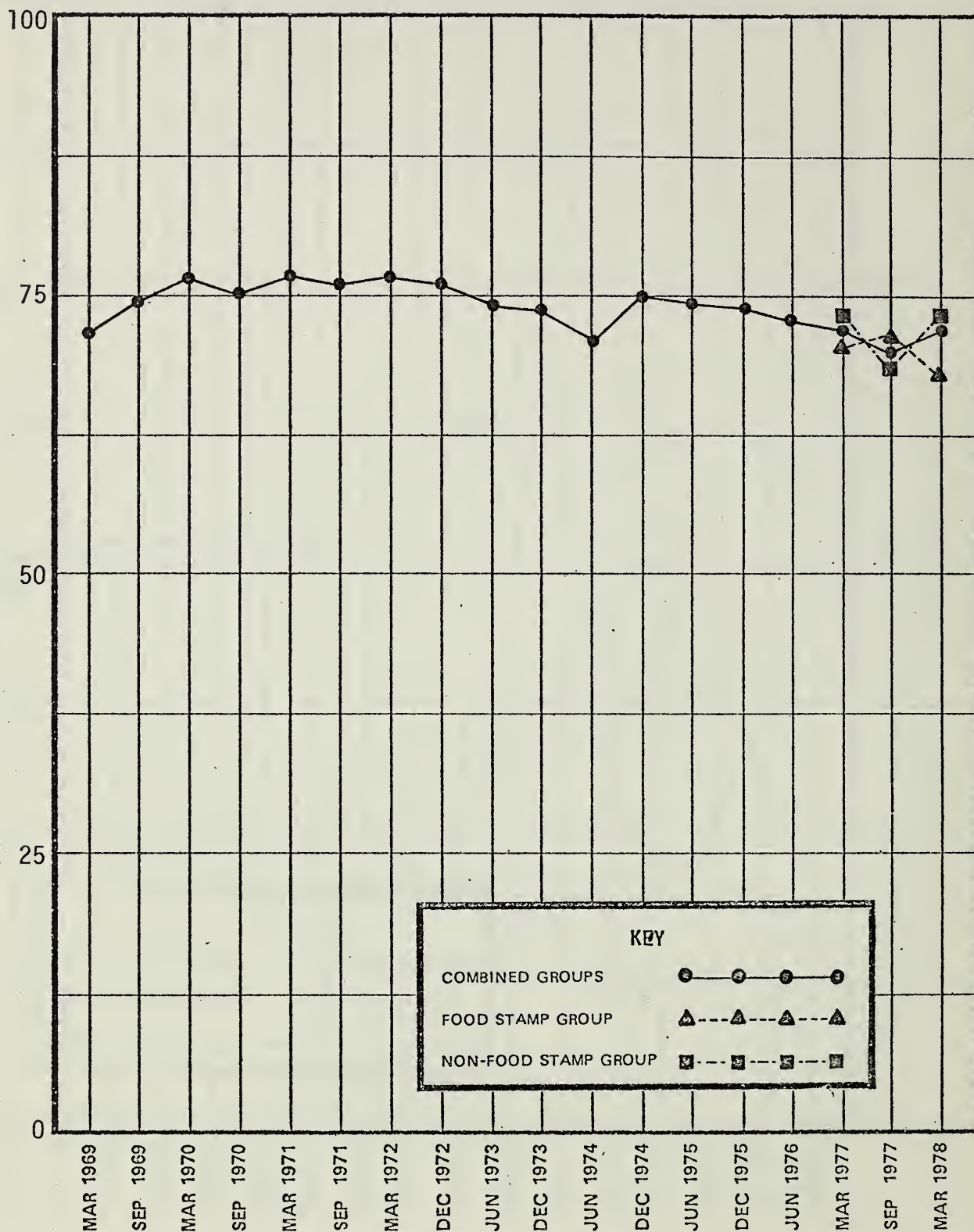


Figure 15: Percentage of Program Homemakers Reporting 2 or more Servings of Meat at Program Entry

Percent

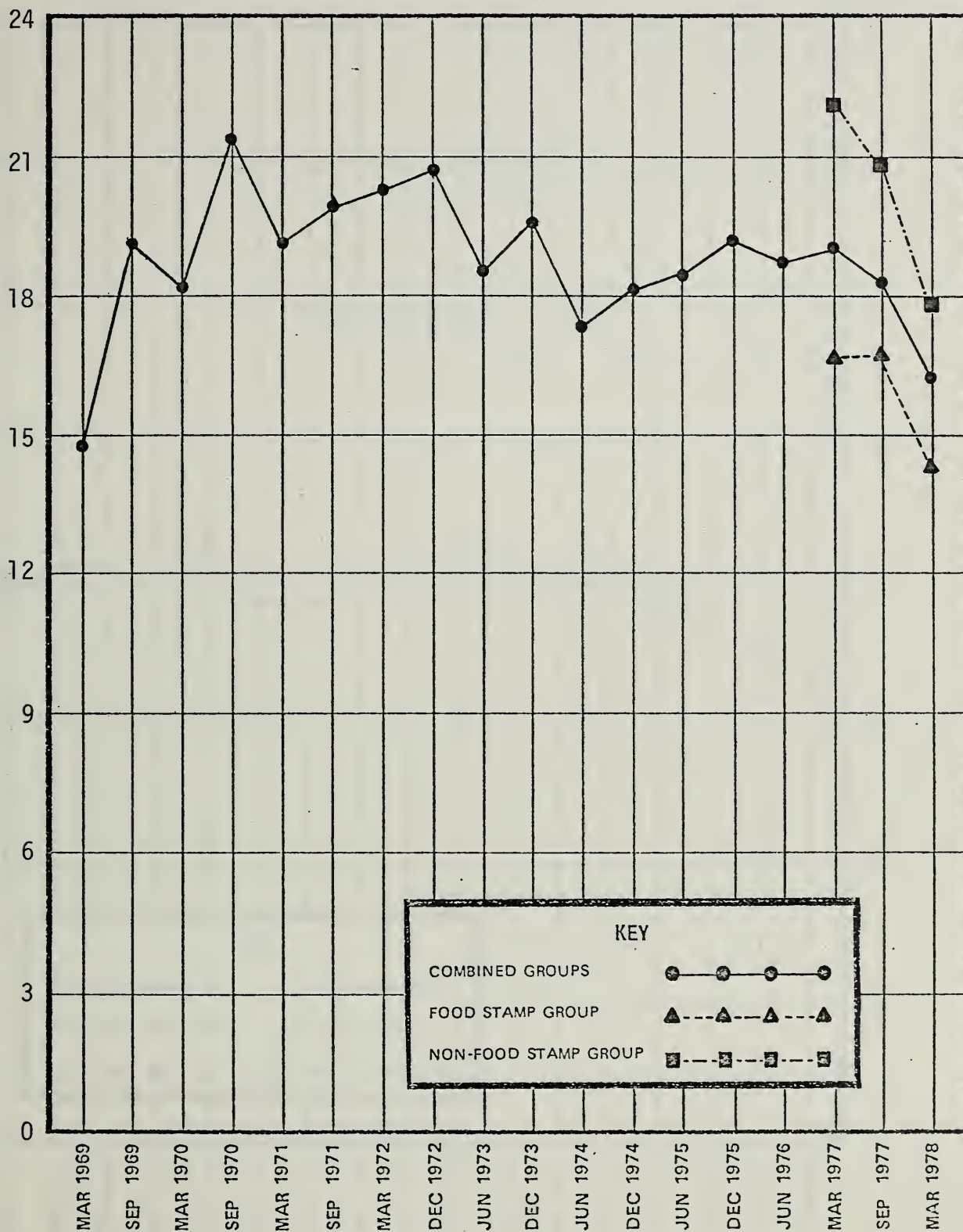


Figure 16: Percentage of Program Homemakers Reporting 4 or More Servings of Vegetables and Fruits at Program Entry

Percent

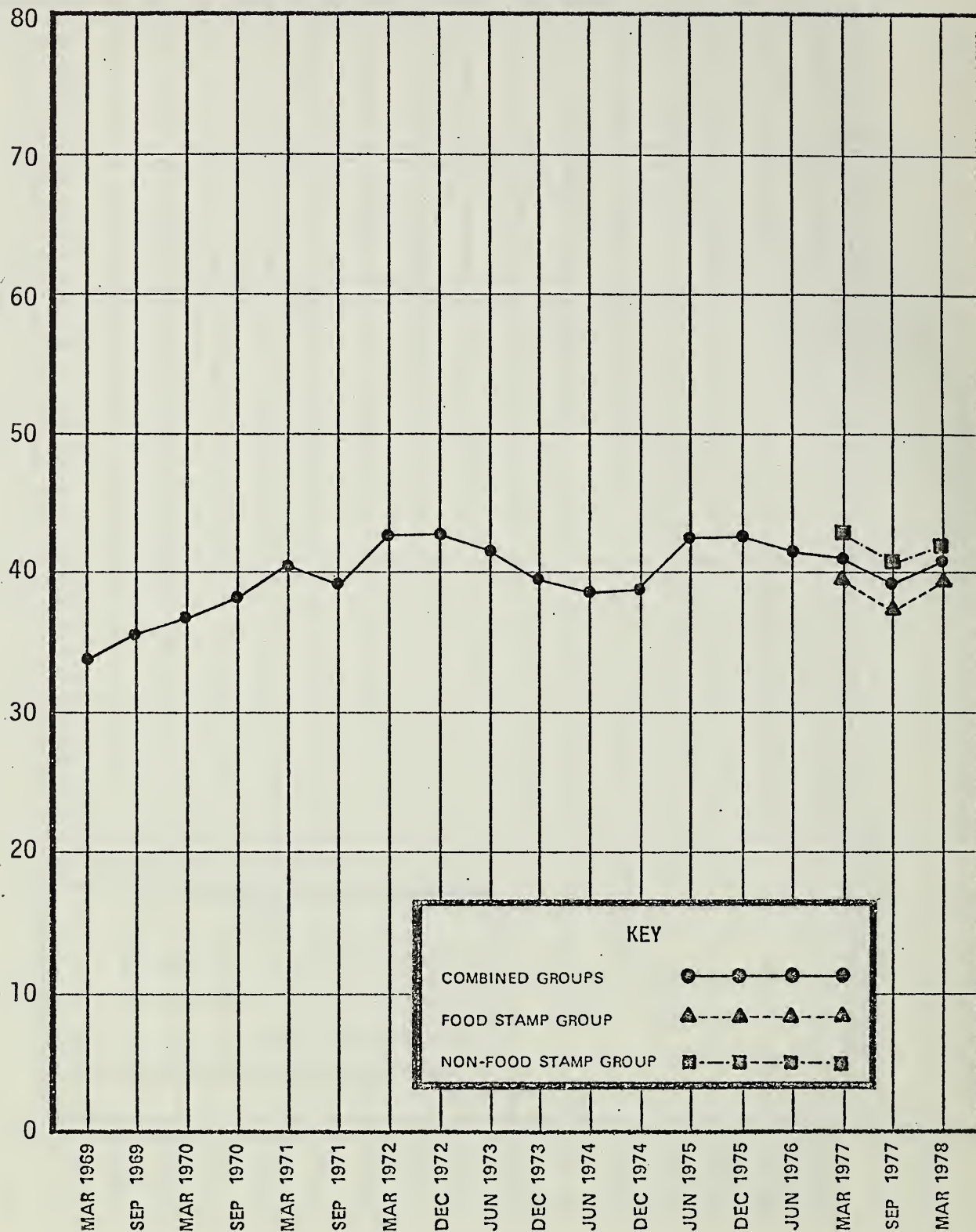


Figure 17: Percentage of Program Homemakers Reporting 4 or More Servings of Breads and Cereals at Program Entry

Percent

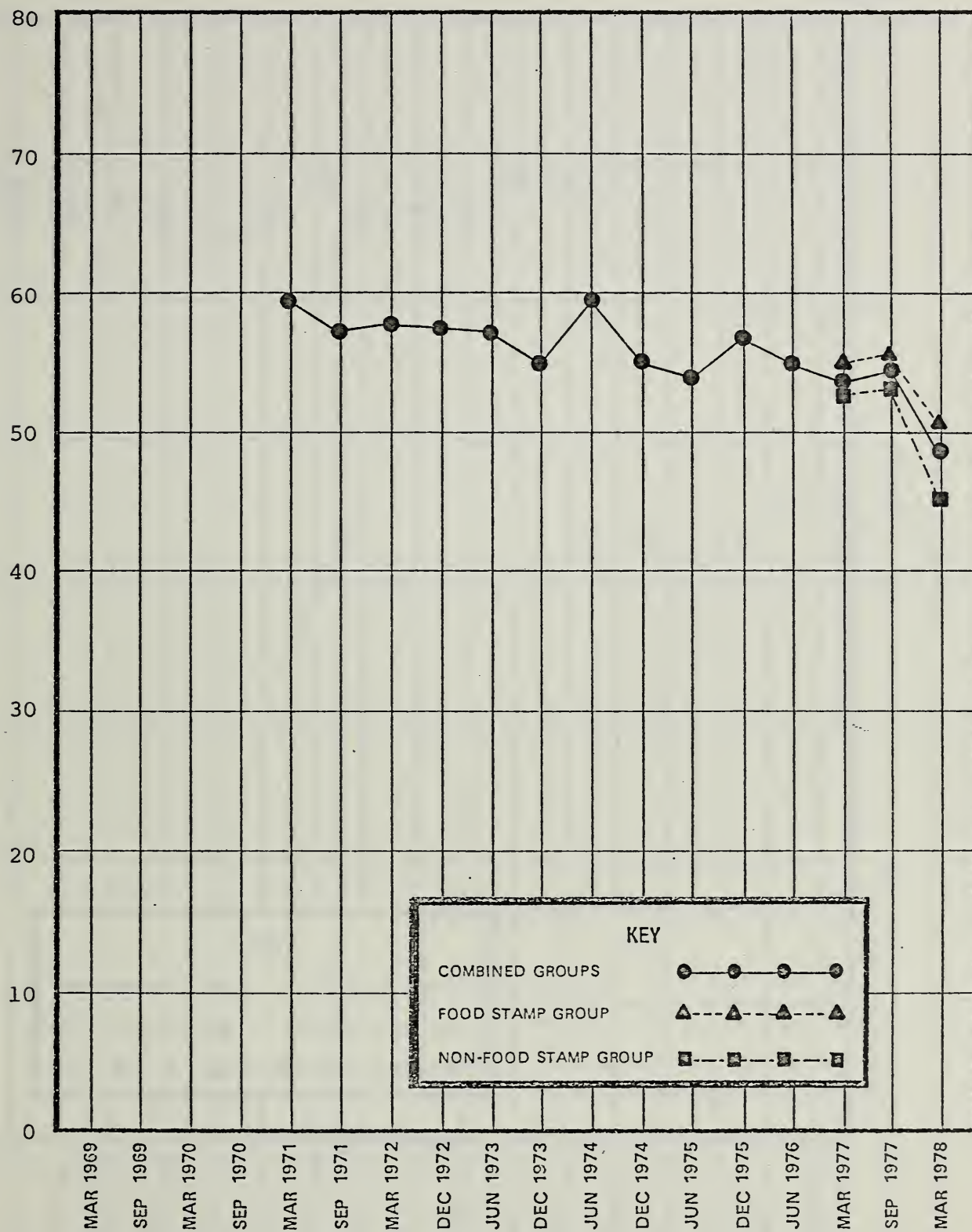


Figure 18: Percentage of Homemakers Reporting 2 or More Servings of Milk after 24 Months of Program Participation

Percent

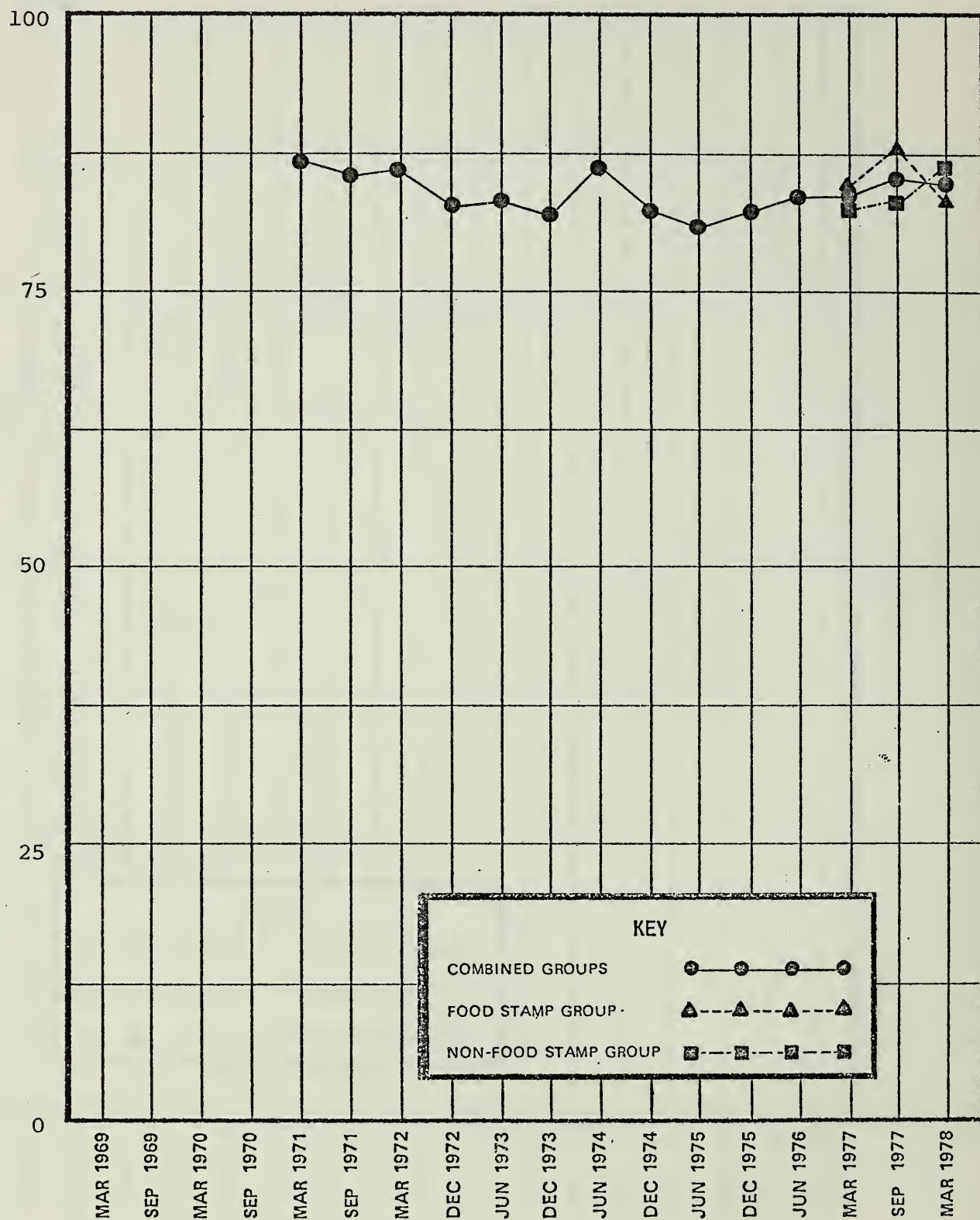


Figure 19: Percentage of Homemakers Reporting 2 or more Servings of Meat after 24 Months of Program Participation

Percent

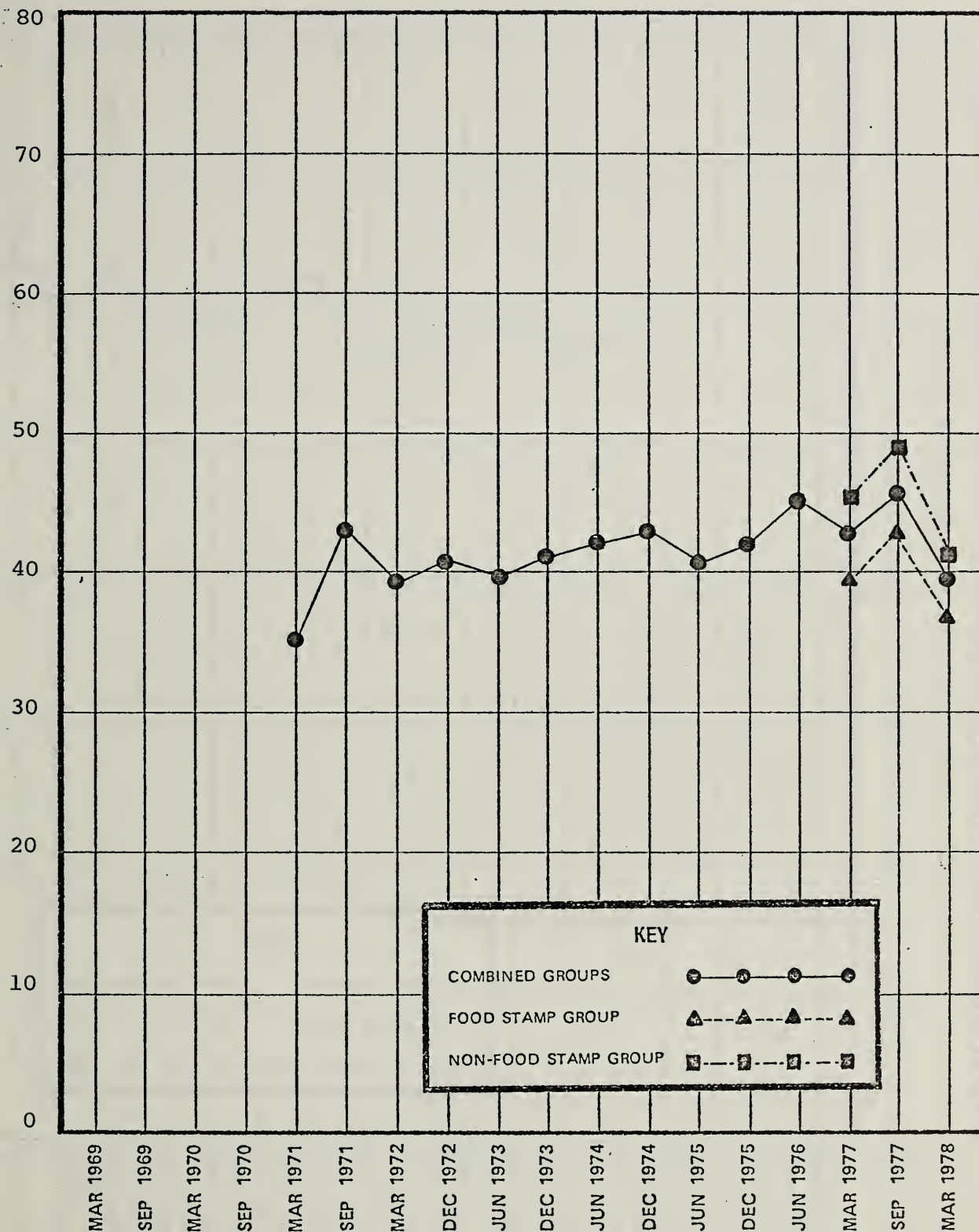


Figure 20: Percentage of Homemakers Reporting 4 or More Servings of Fruits and Vegetables after 24 Months of Program Participation

Percent

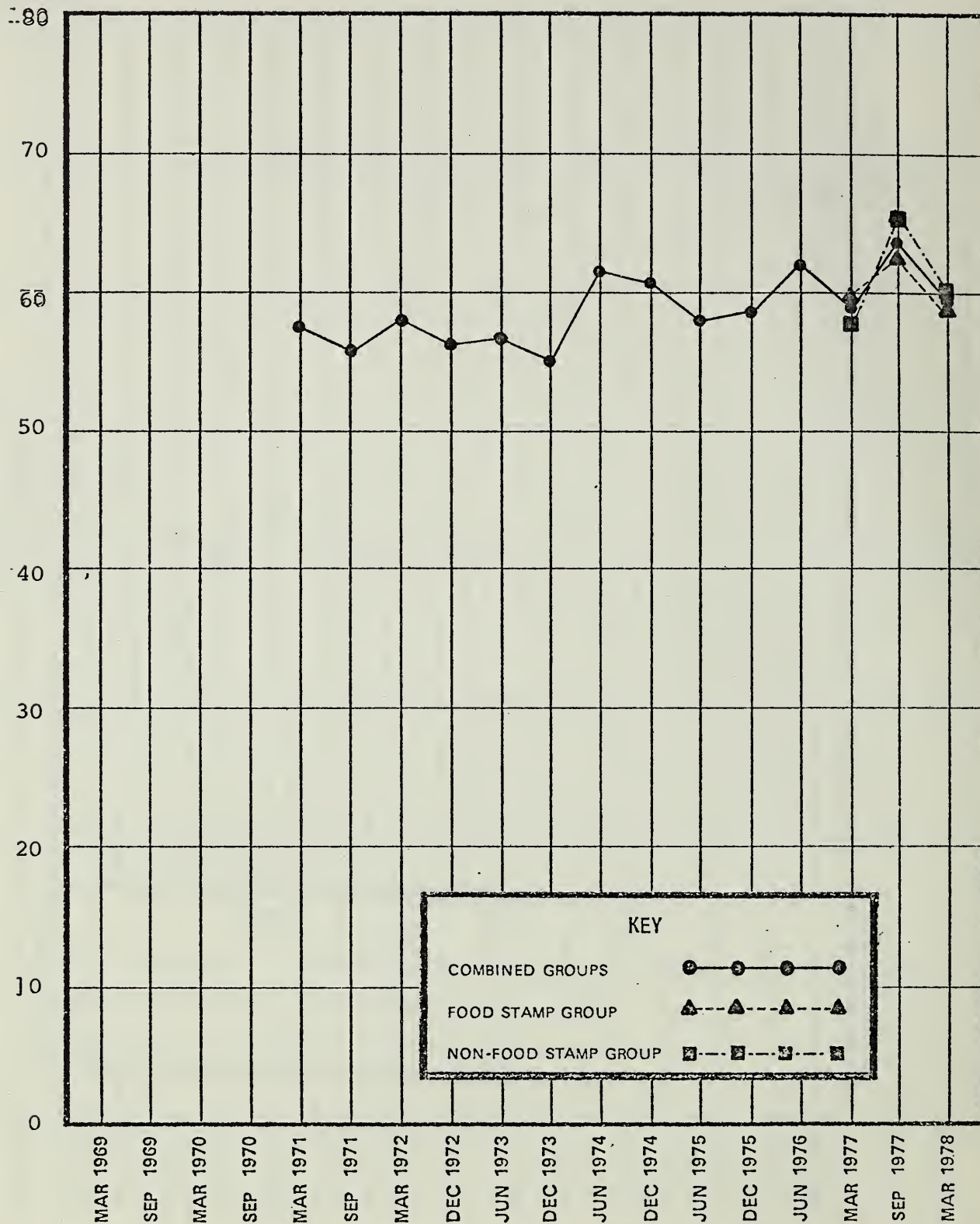


Figure 21: Percentage of Homemakers Reporting 4 or More Servings of Breads and Cereals after 24 Months of Program Participation

Percent

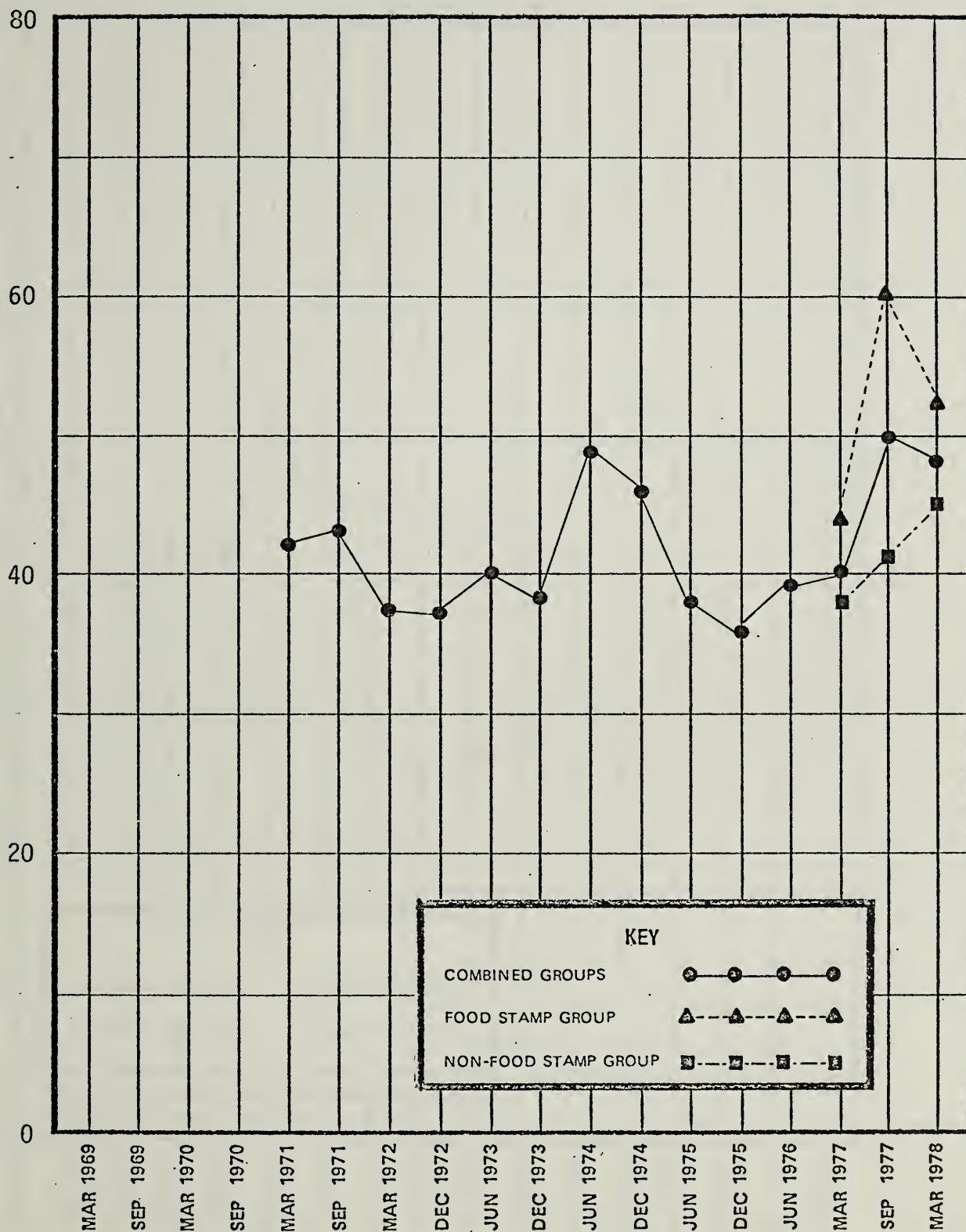


Figure 22: Percentage Difference Between the Percentage of Program Homemakers Reporting Minimum Diets at Program Entry and Percentage of Program Homemakers Reporting Minimum Diets After 24 Months of Program Participation

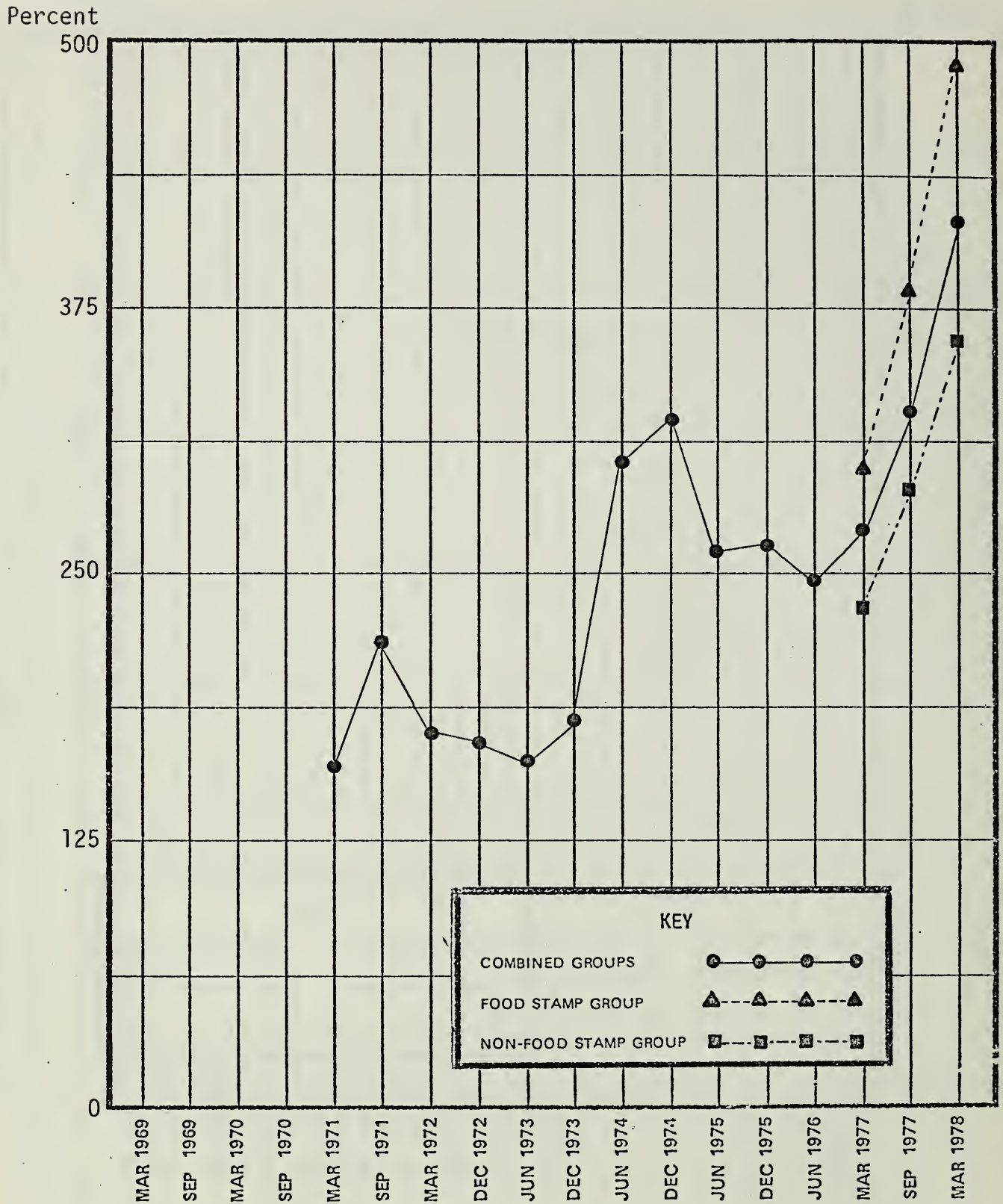


Figure 23. Percentage Difference Between the Percentage of Program Homemakers Reporting Adequate Diets at Program Entry and Percentage of Program Homemakers Reporting Adequate Diets After 24 Months of Program Participation

Percent

100

75

50

25

0

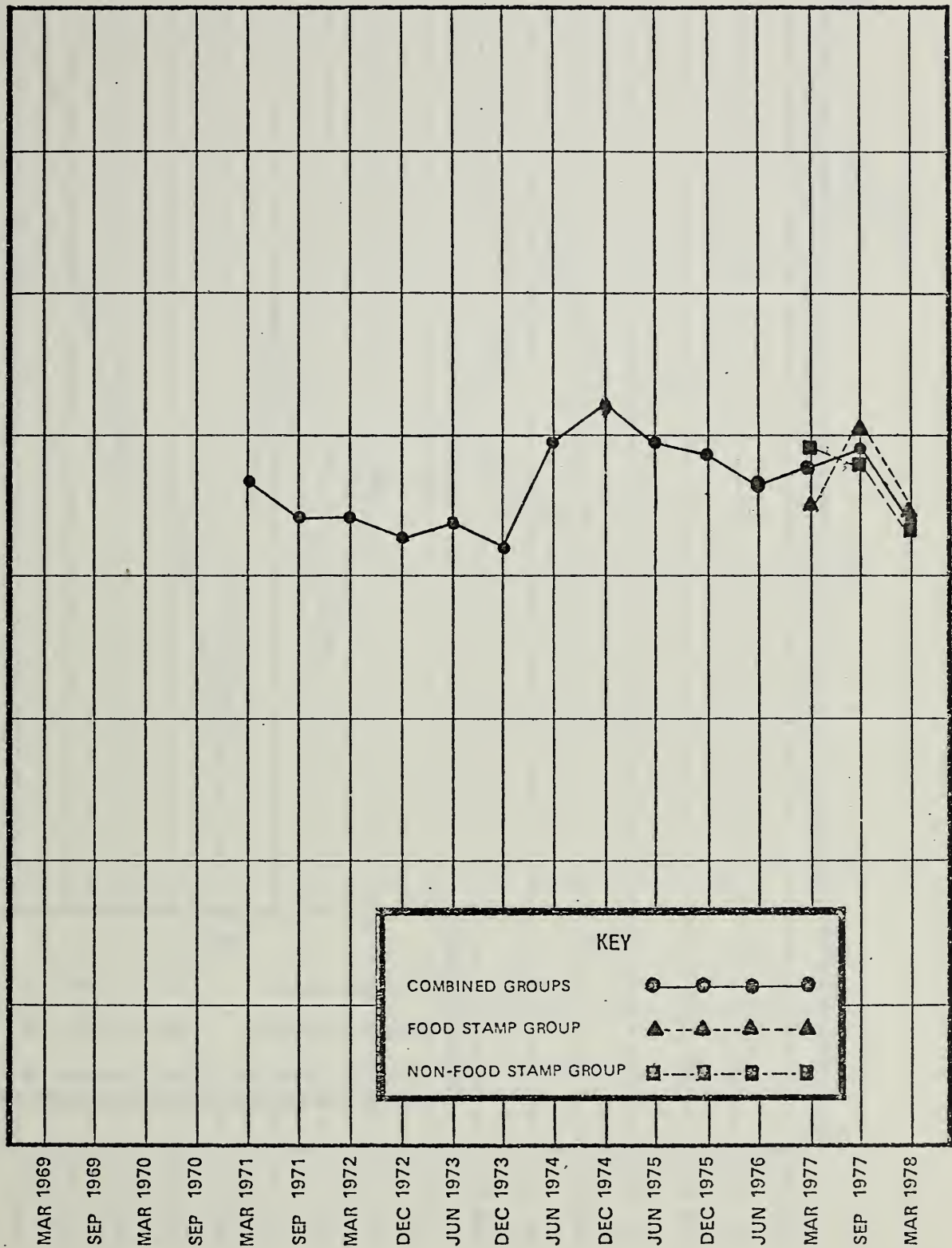


Figure 24: Percentage Difference Between Percentage of Program Homemakers Reporting No Milk Servings at Program Entry and Percentage of Program Homemakers Reporting No Milk Servings After 24 Months of Program Participation

Percent

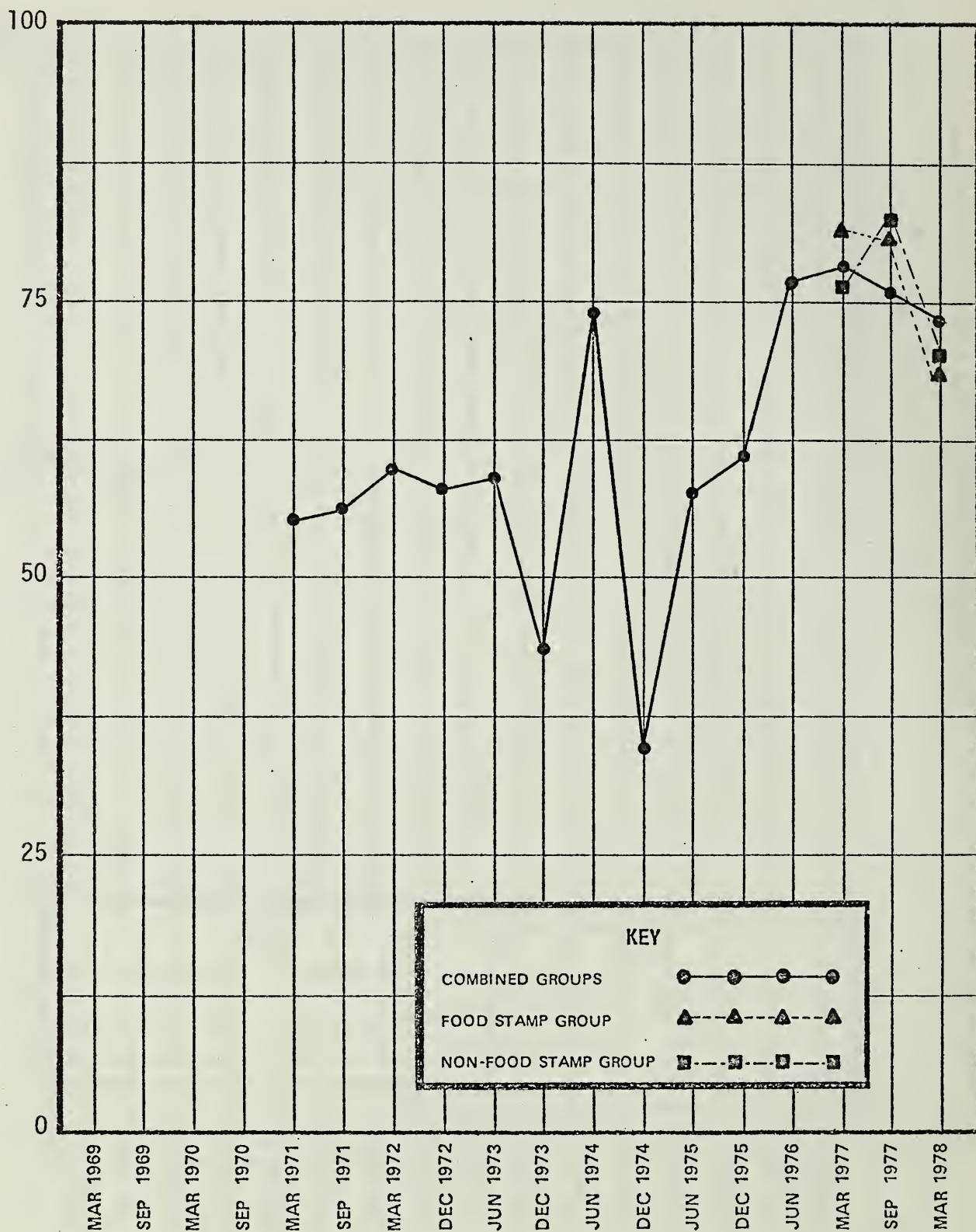


Figure 25: Percentage Difference Between Percentage of Program Homemakers Reporting No Meat Servings at Program Entry and Percentage of Program Homemakers Reporting No Servings of Meat after 24 Months of Program Participation

Percent

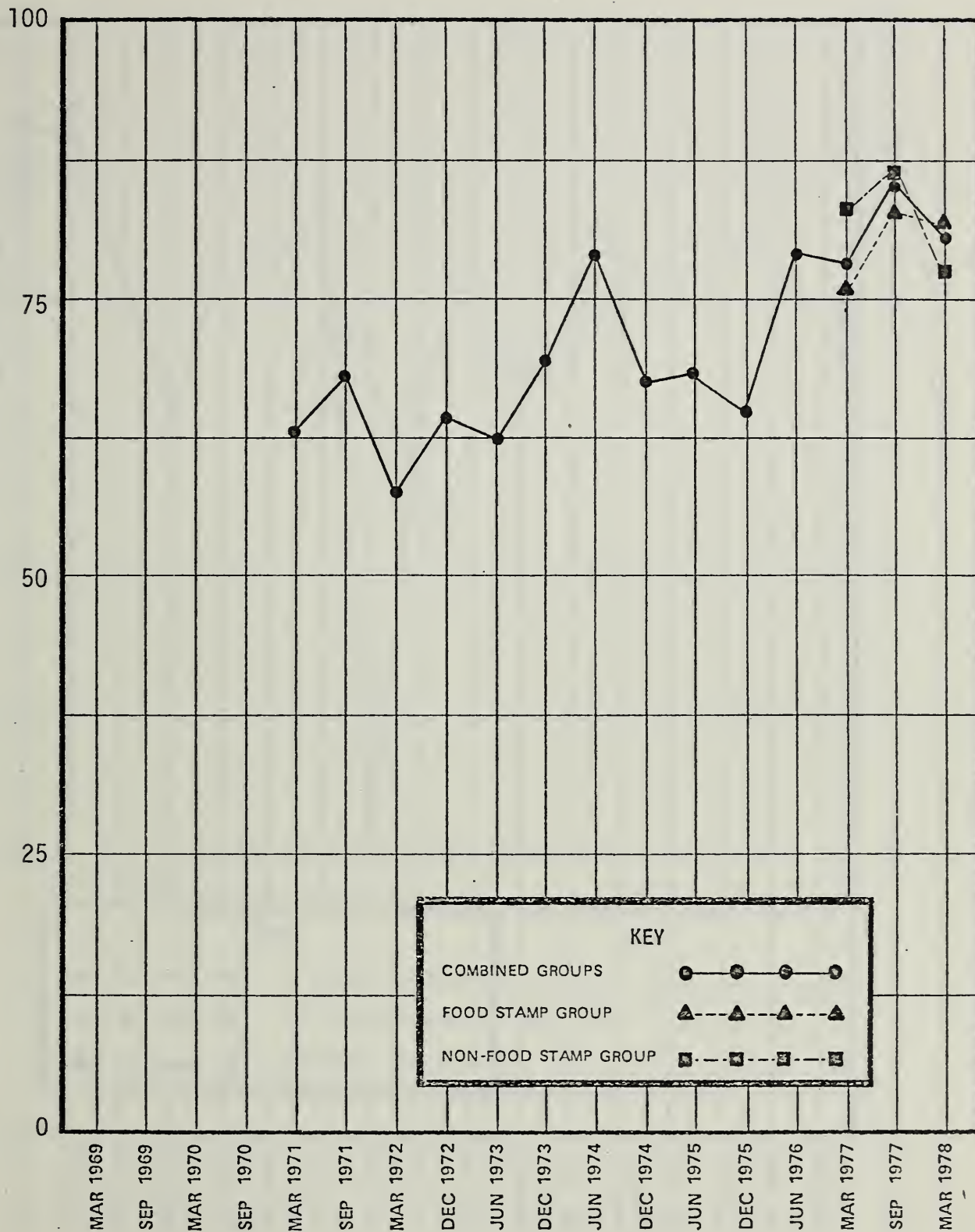


Figure 26: Percentage Difference Between Percentage of Program Homemakers Reporting no Fruits and Vegetables Servings at Program Entry and Percentage of Program Homemakers Reporting No Fruits and Vegetables Servings After 24 Months of Program Participation

Percent

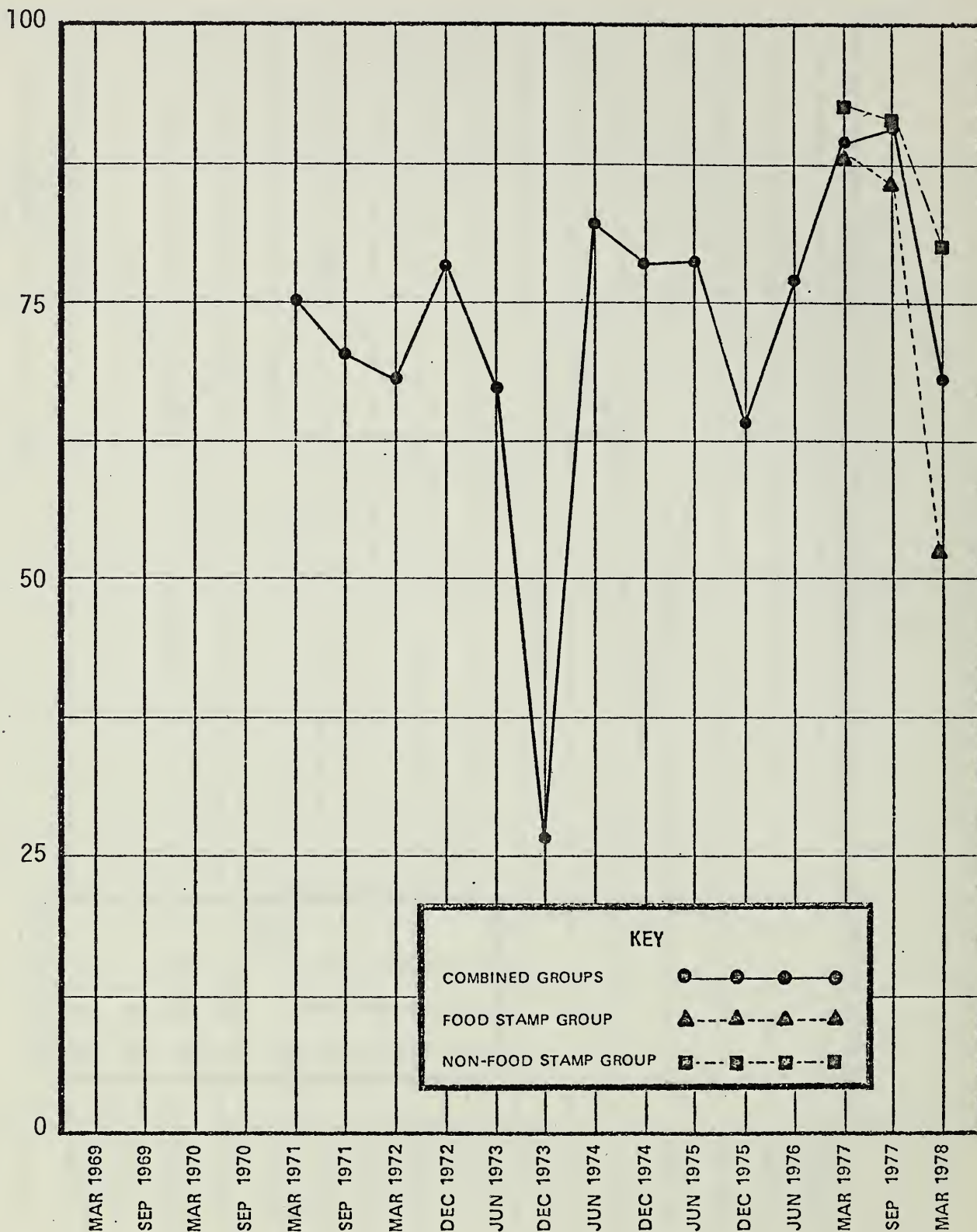


Figure 27: Percentage Difference Between Percentage of Program Homemakers Reporting No Breads and Cereals Servings at Program Entry and Percentage of Program Homemakers Reporting No Breads and Cereals Servings After 24 Months of Program Participation

Percent

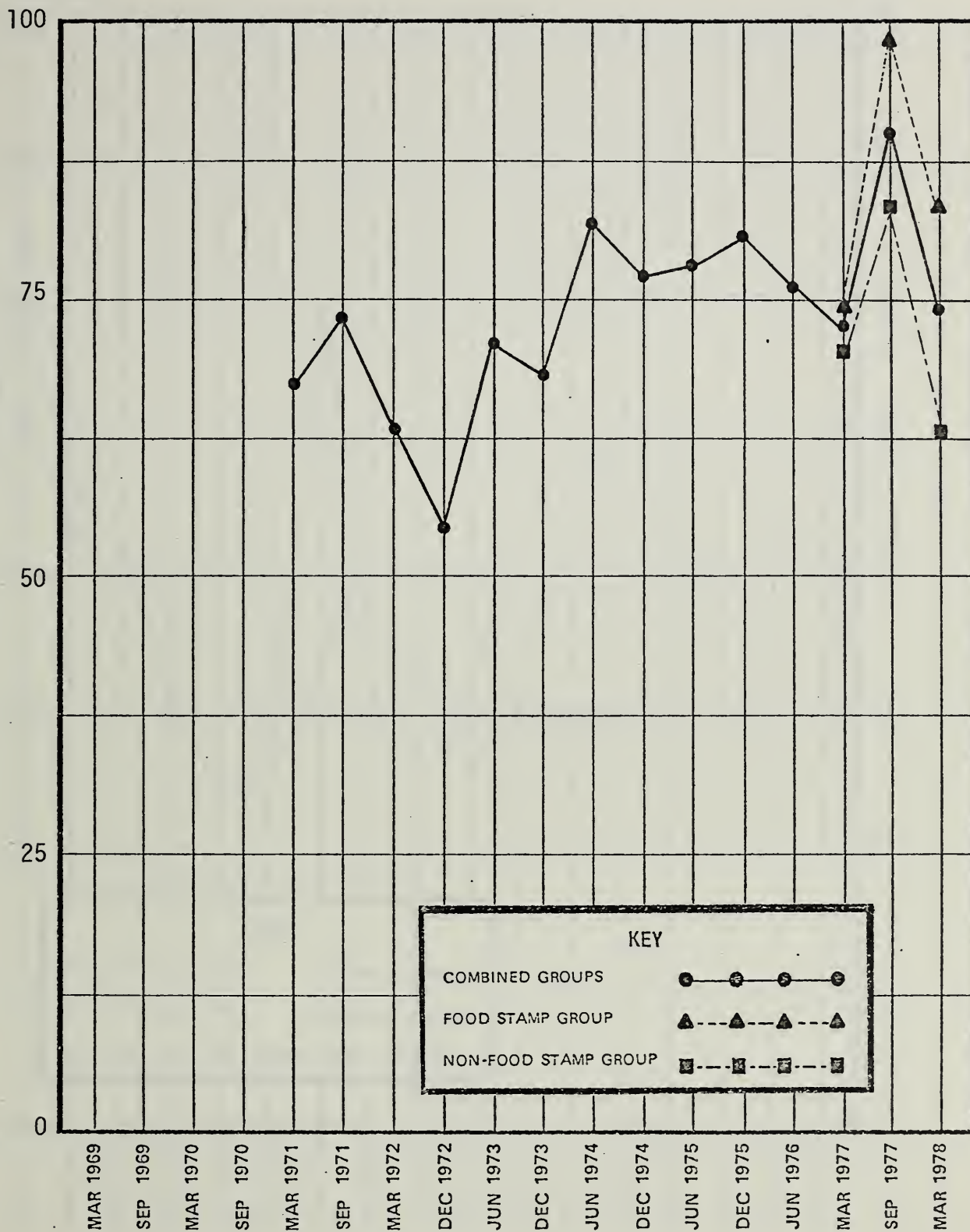


Figure 28: Percentage Difference Between Percentage of Program Homemakers Reporting Adequate Milk Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Milk Servings after 24 Months of Program Participation

Percent

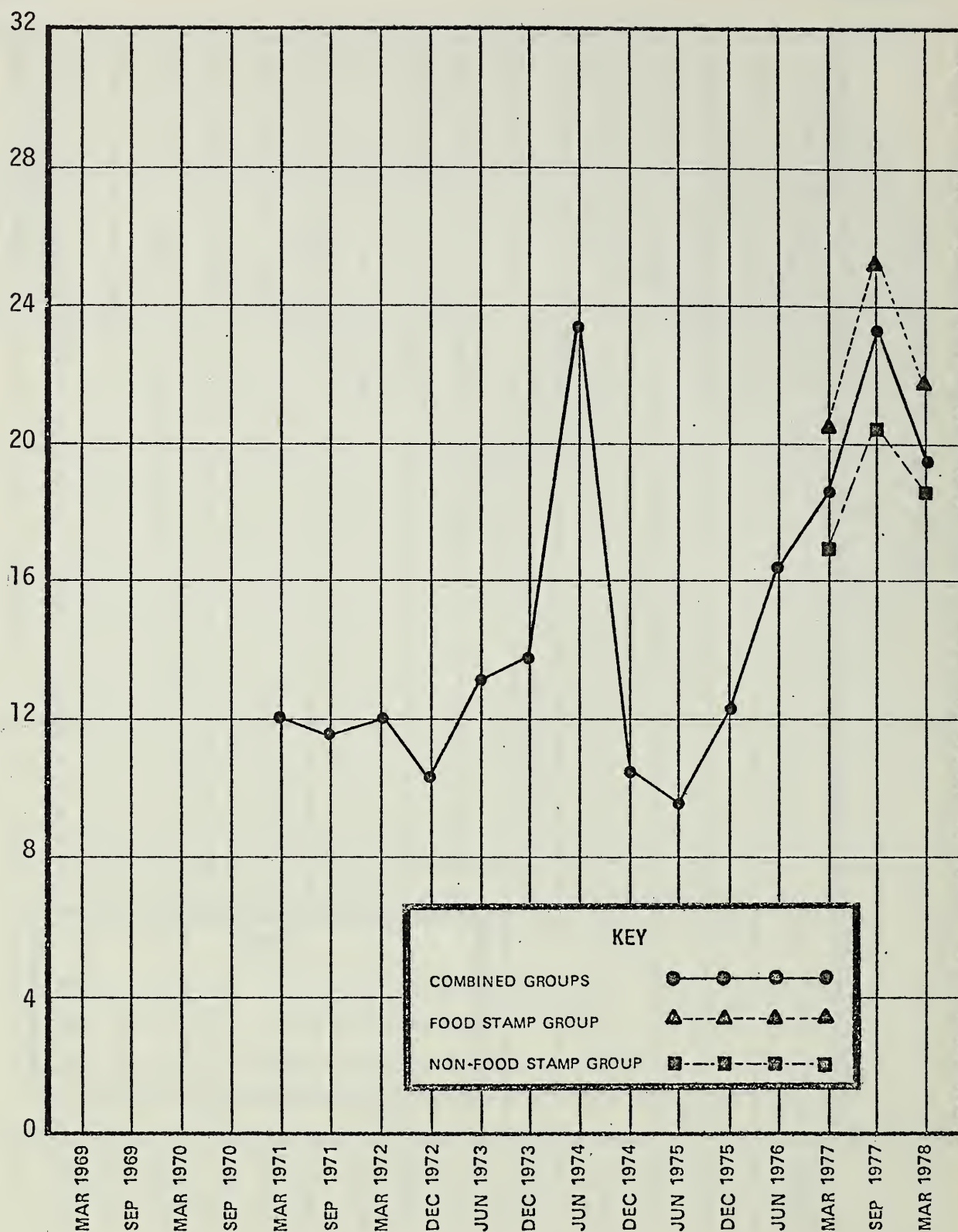


Figure 29: Percentage Difference Between Percentage of Program Homemakers Reporting Adequate Meat Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Meat Servings After 24 Months of Program Participation

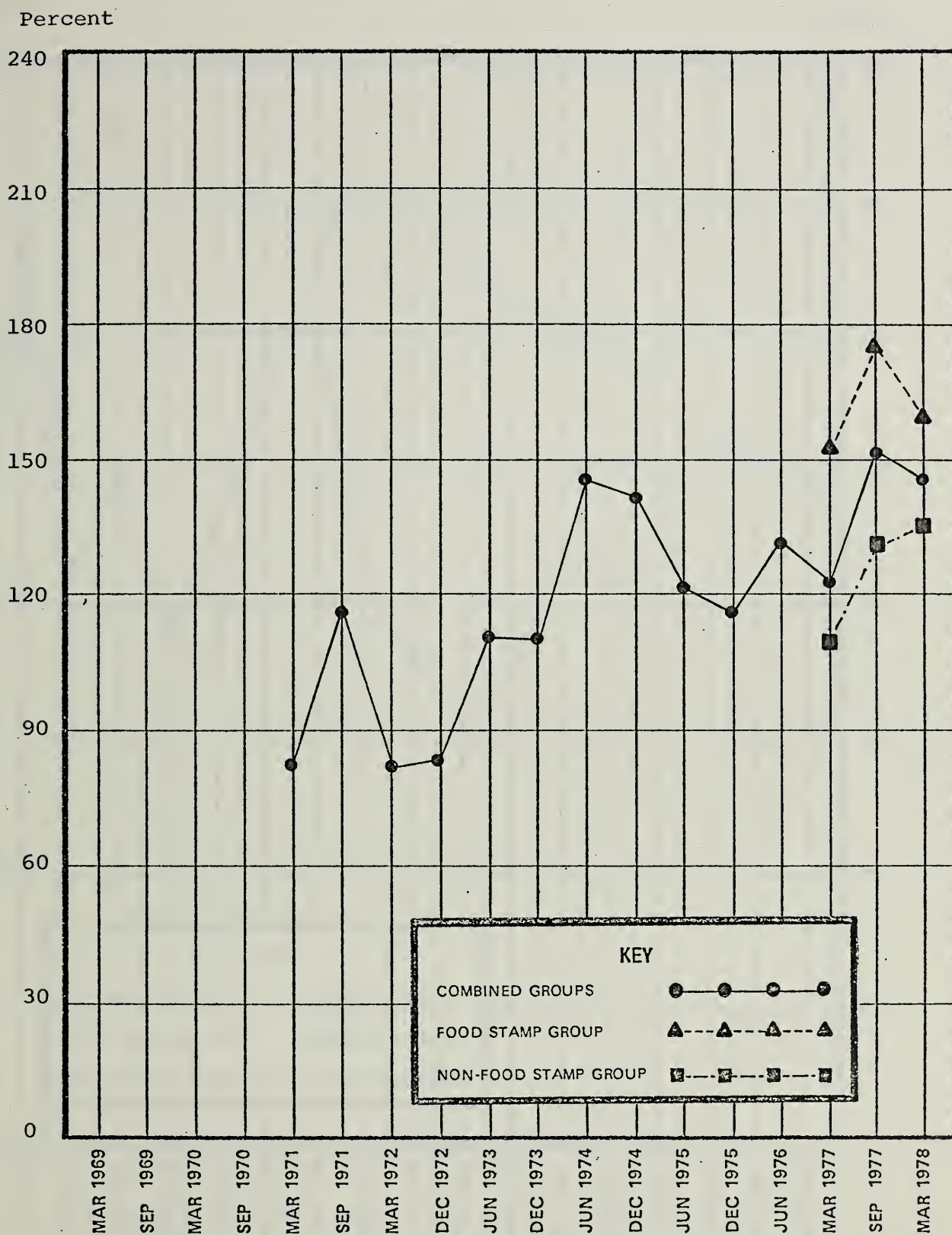


Figure 30: Percentage Difference Between Percentage of Program Homemakers Reporting Adequate Vegetables and Fruits Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Vegetables and Fruits Servings After 24 Months of Program Participation

Percent

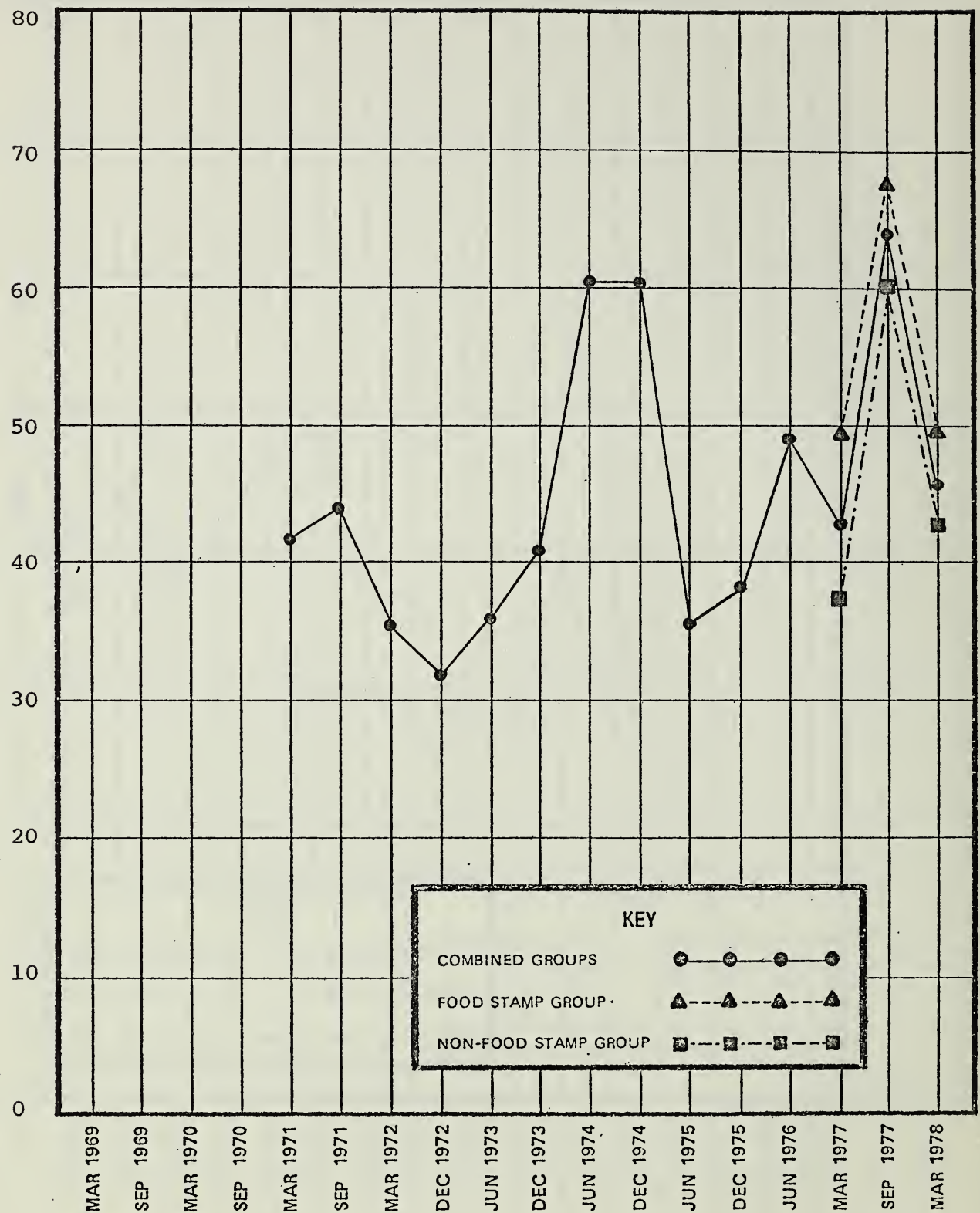


Figure 31: Percentage Difference Between Percentage of Program Homemakers Reporting Adequate Breads and Cereals Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Breads and Cereals Servings After 24 Months of Program Participation

Families

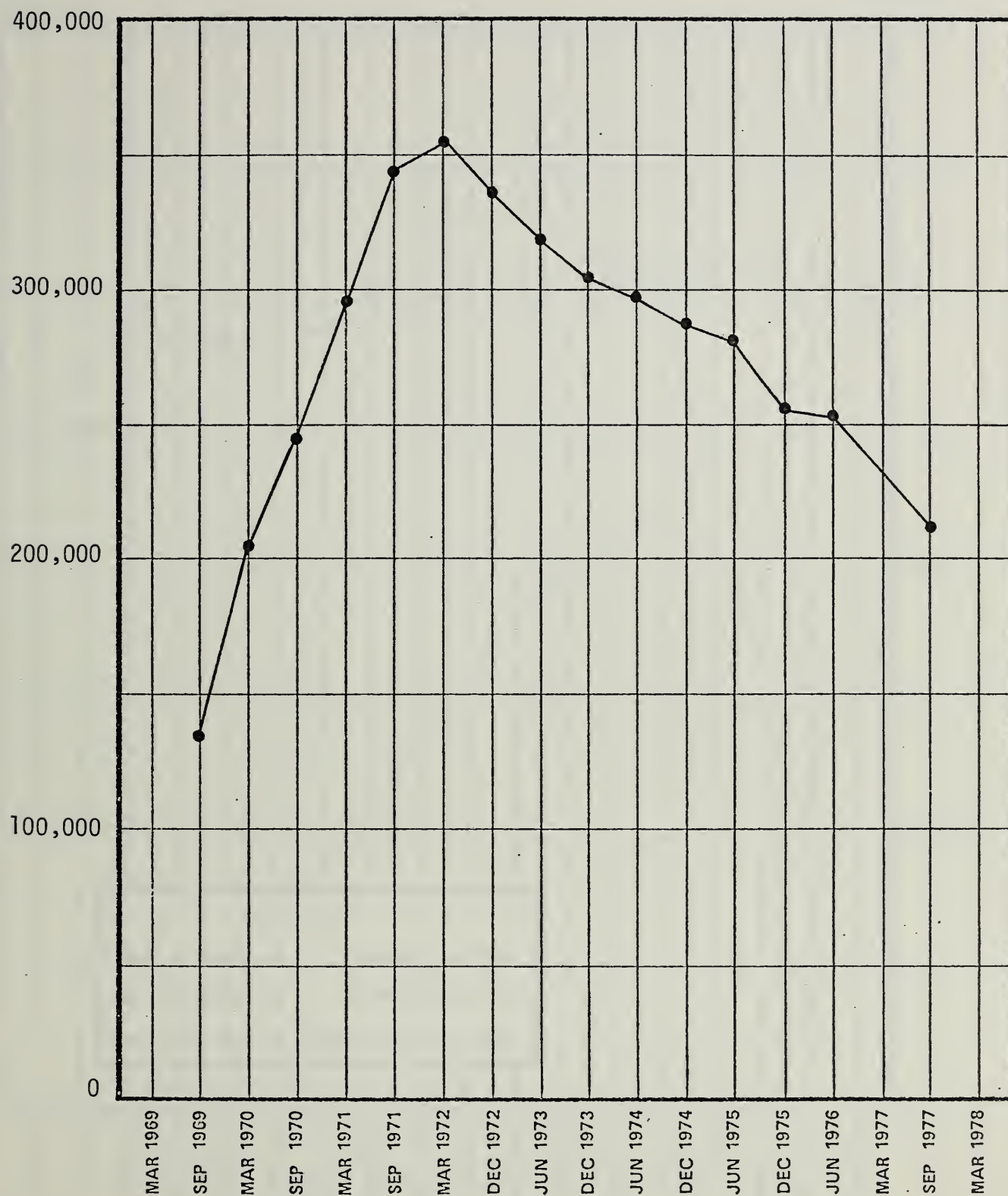


Figure 32: Program Families Active at the End of the Reporting Period

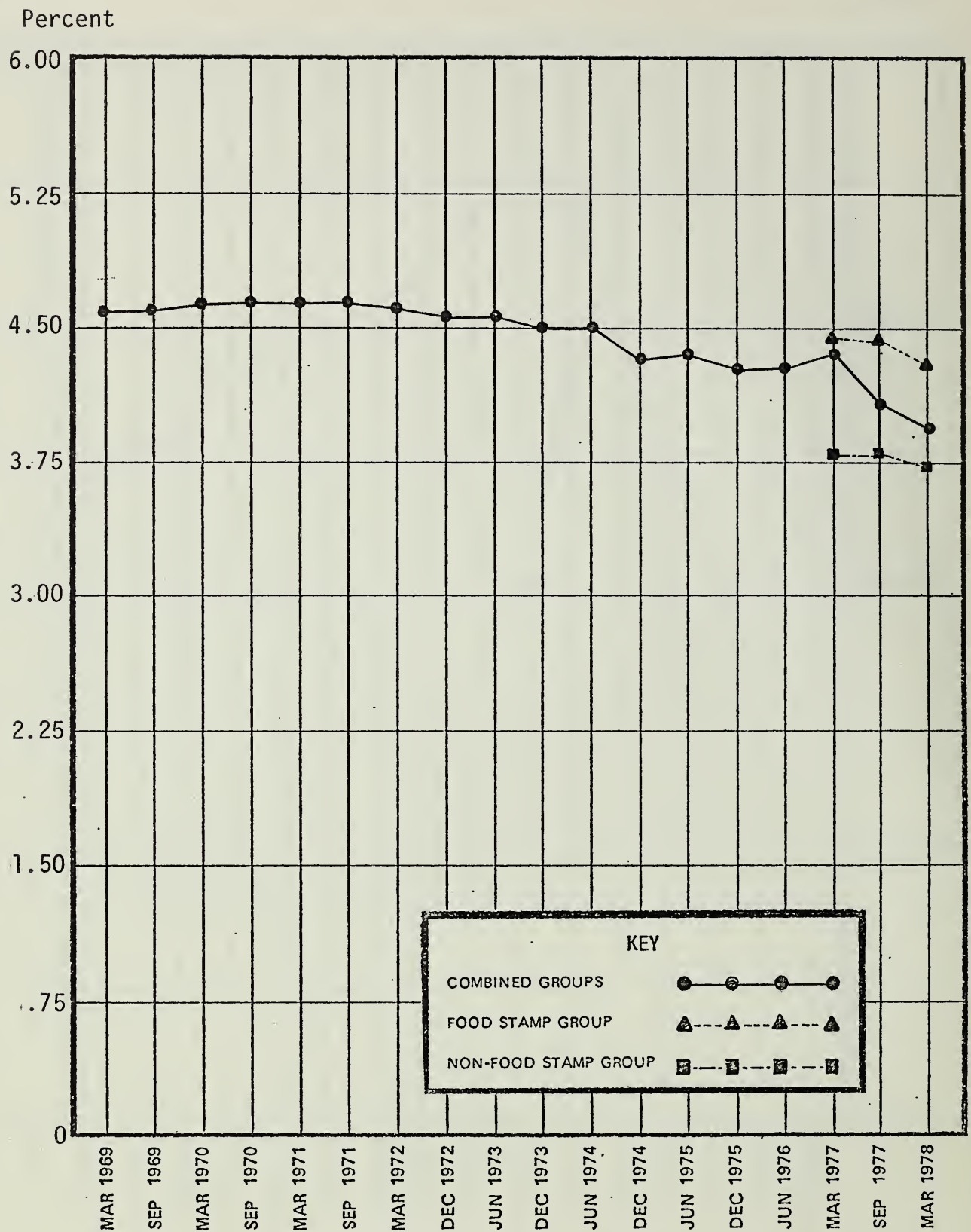


Figure 33: Program Family Size

Families

2,000,000

1,500,000

1,000,000

500,000

0

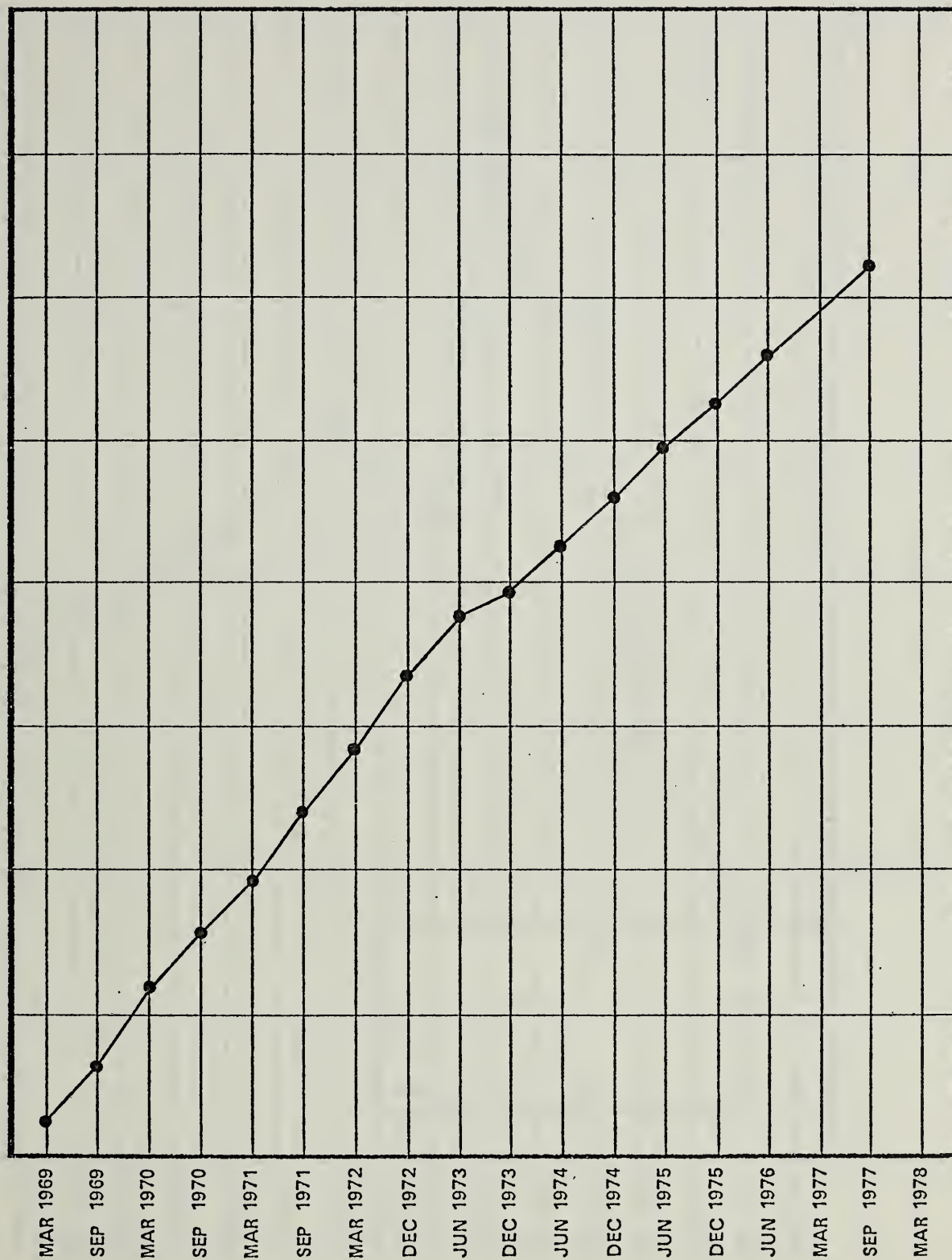


Figure 34: Cumulative Program Families

Families

150,000

112,500

75,000

37,500

0

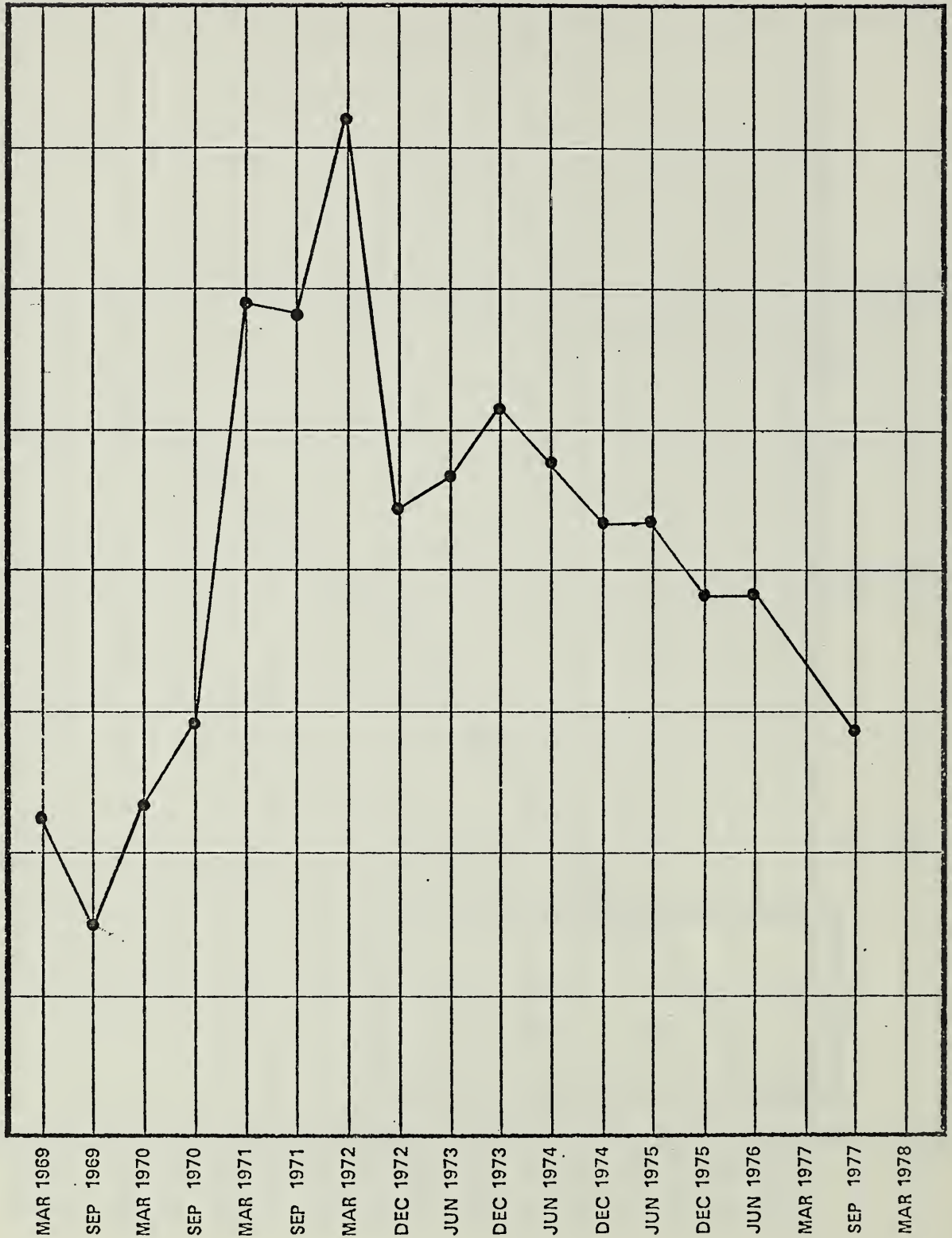


Figure 35: Non-Program Families at the End of the Reporting Period

Dollars

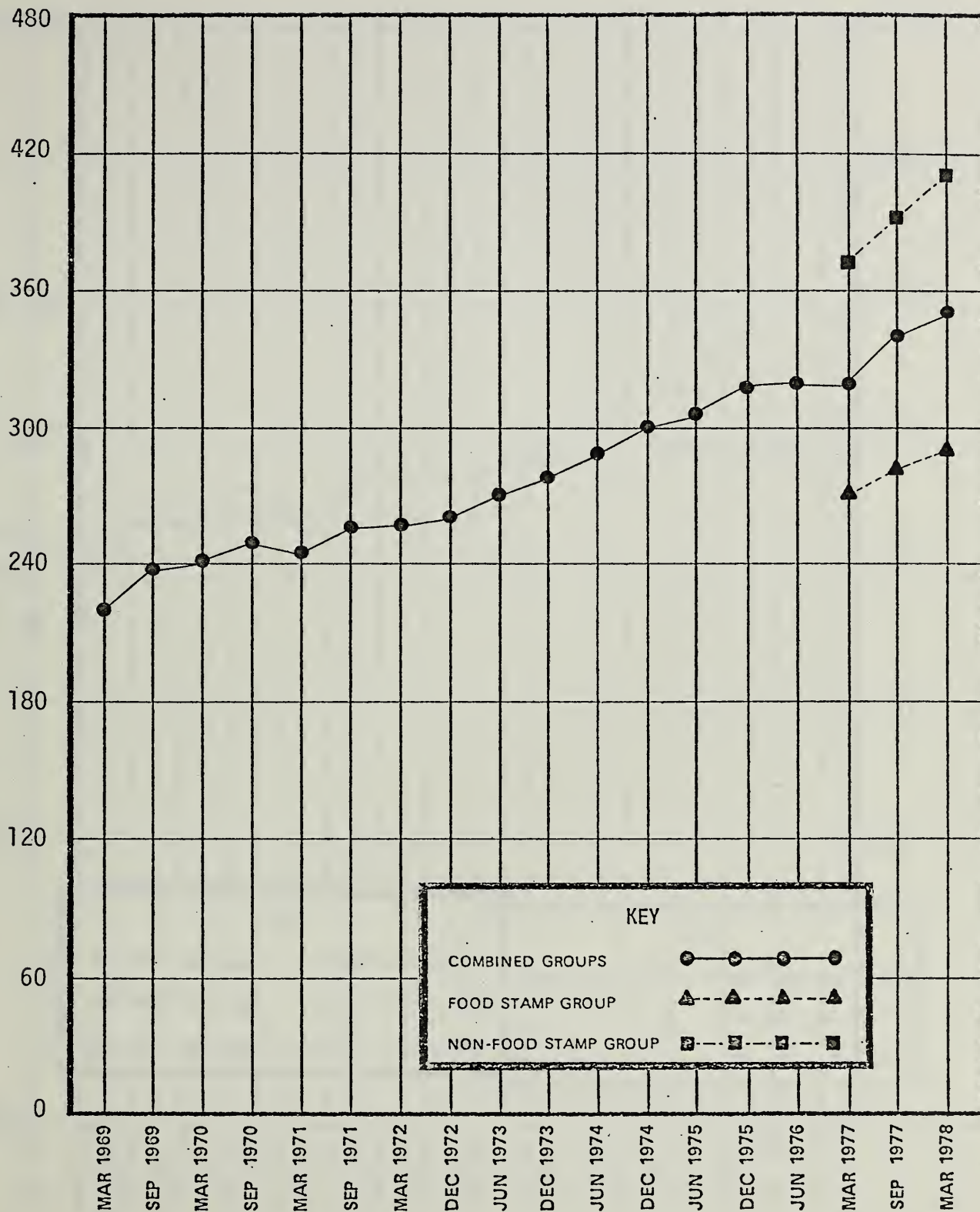


Figure 36: Family Income in Current Dollars

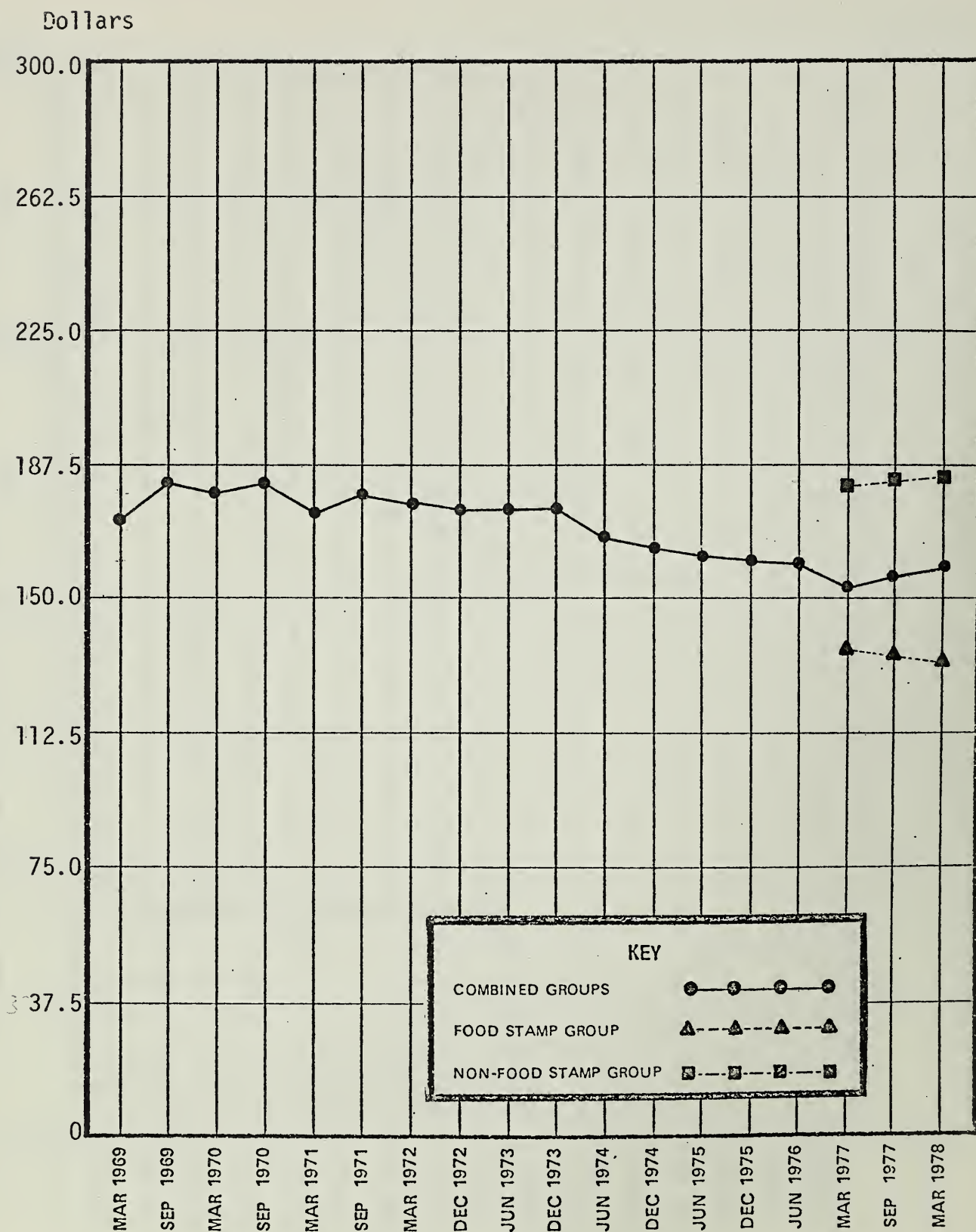


Figure 37: Family Income in Constant (1957-1959) Dollars

Dollars

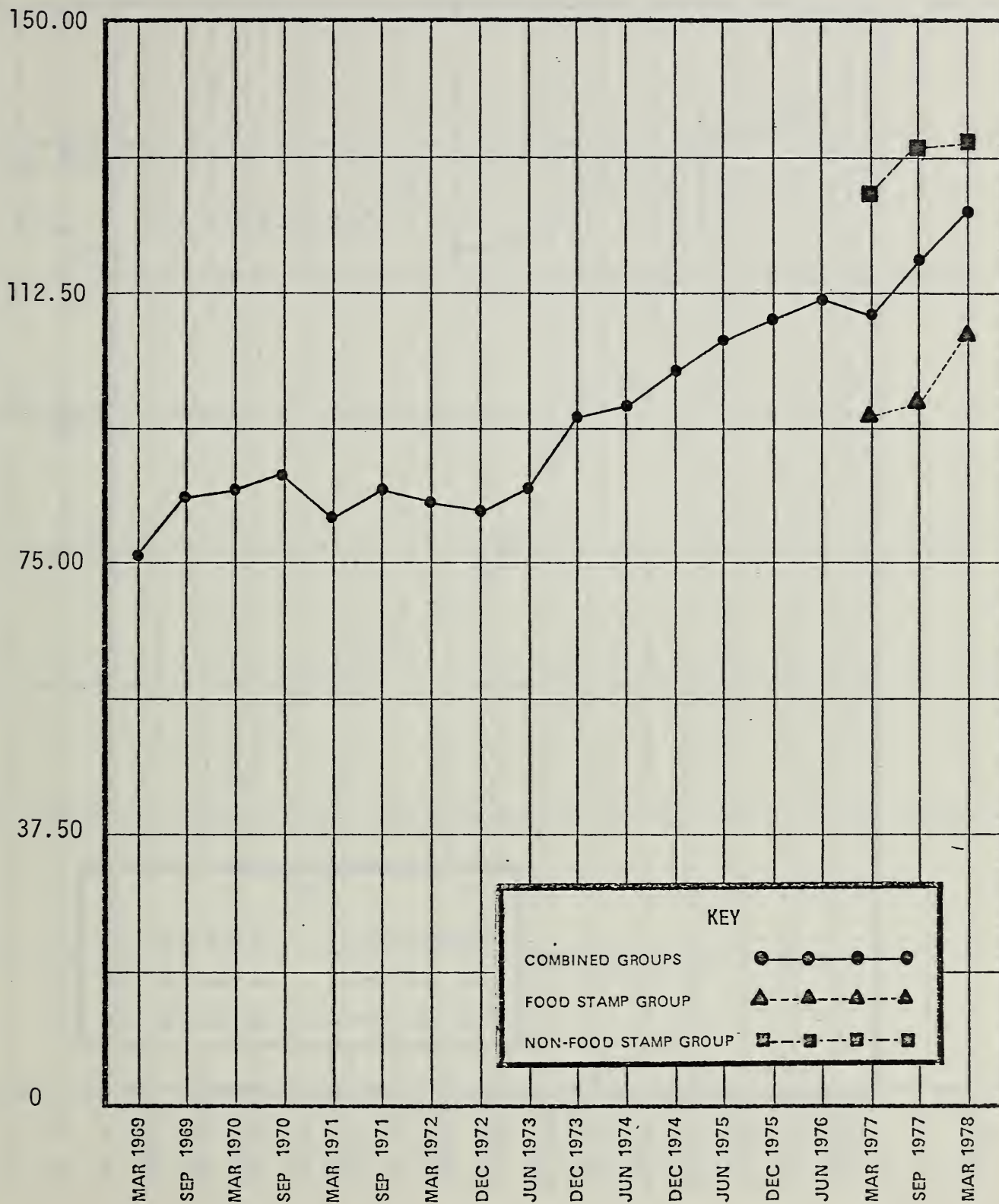


Figure 38: Program Family Food Expenditures in Current Dollars

Dollars

70

52.5

35

17.5

0

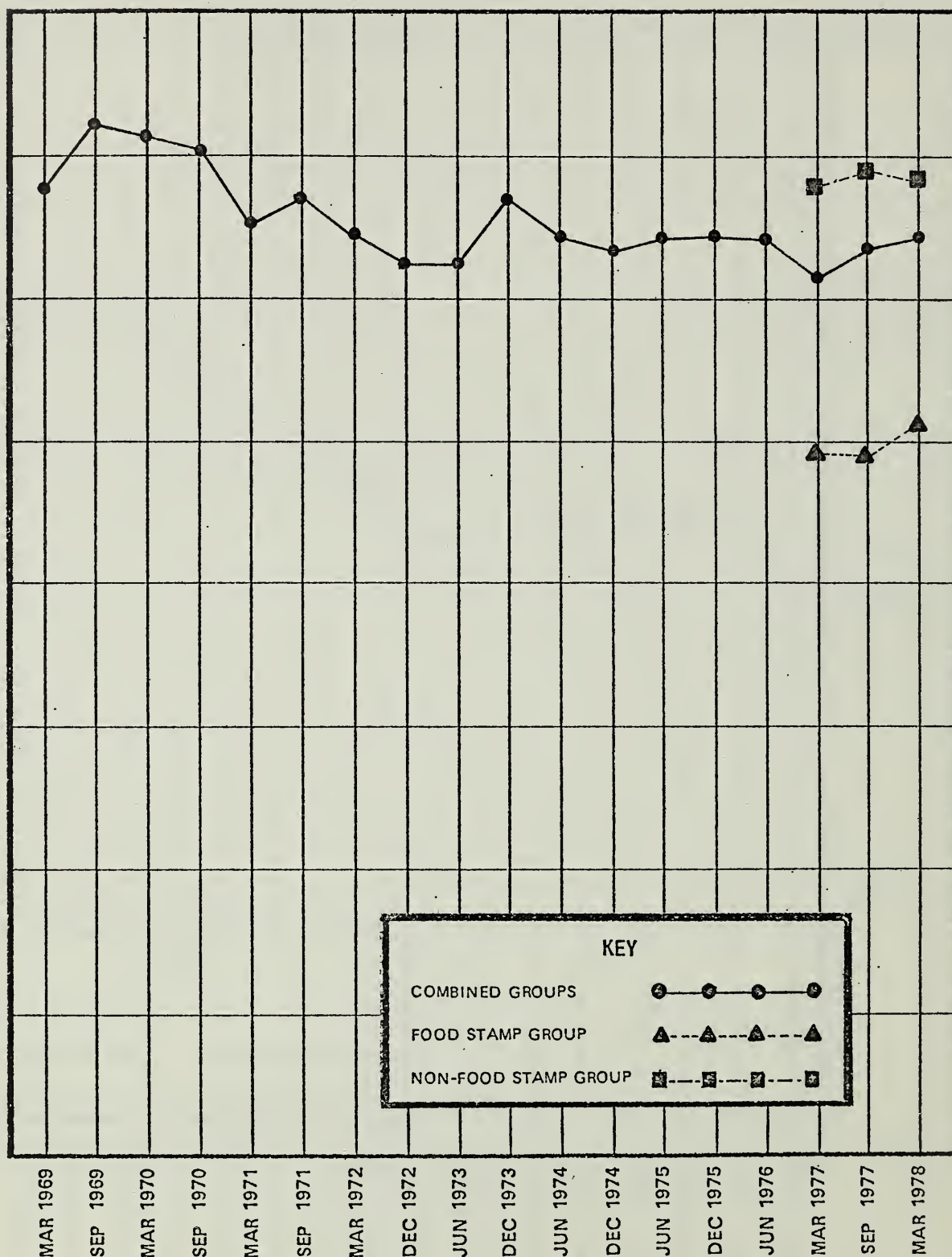


Figure 39: Program Family Food Expenditures in Constant (1957-1959) Dollars

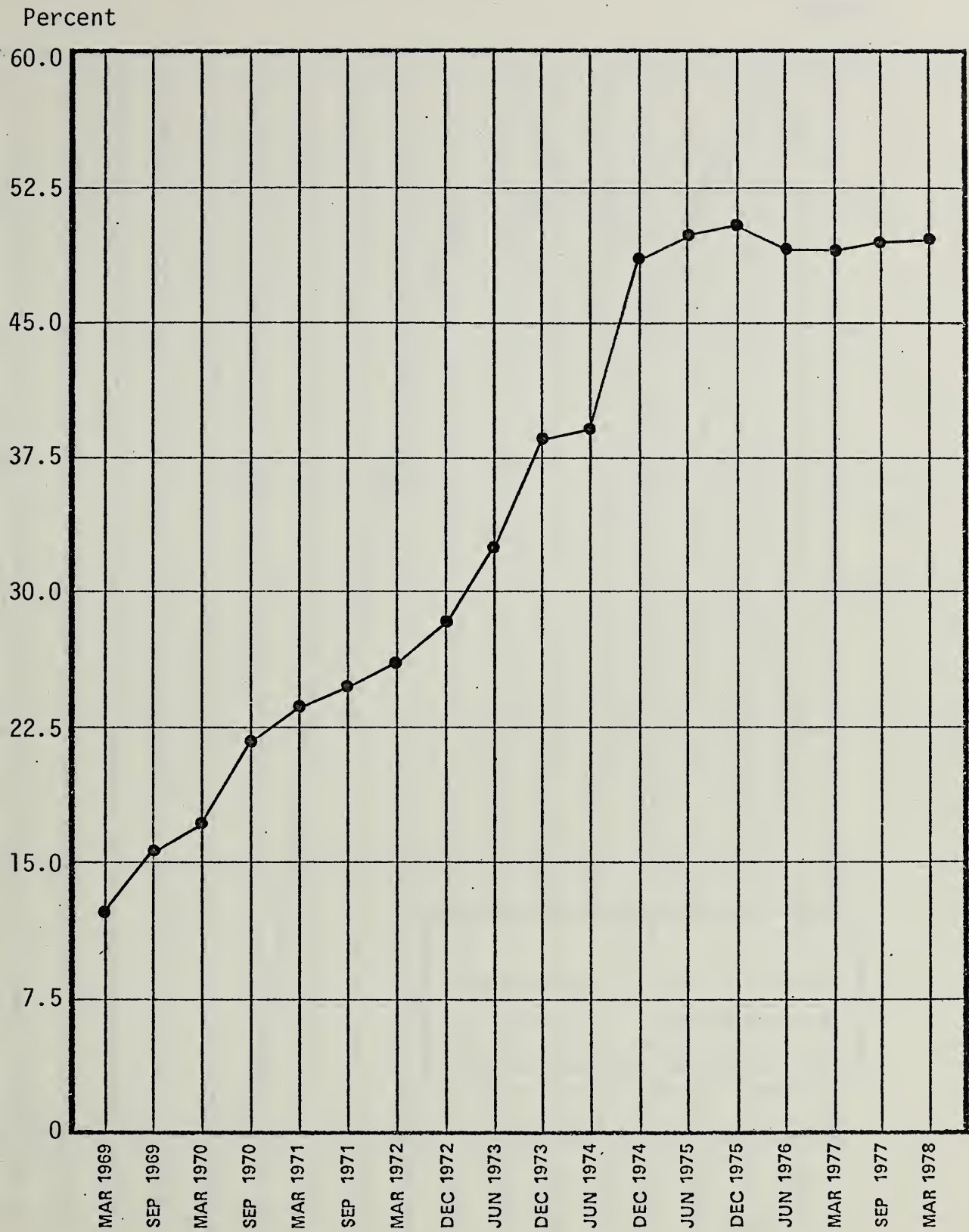


Figure 40: Percent of Program Families Receiving Food Stamps

Percent

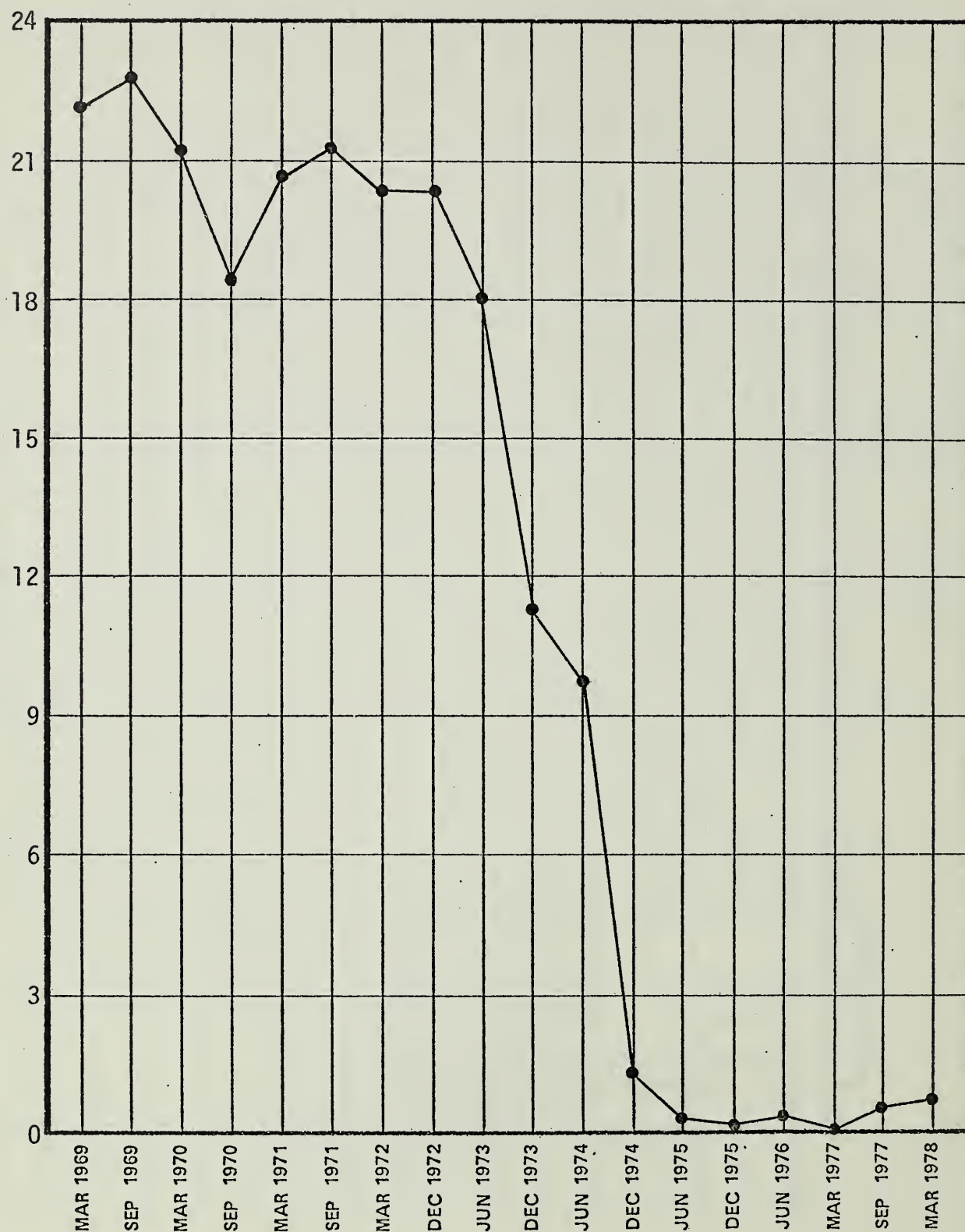


Figure 41: Percent of Program Families Receiving Donated Foods

Percent

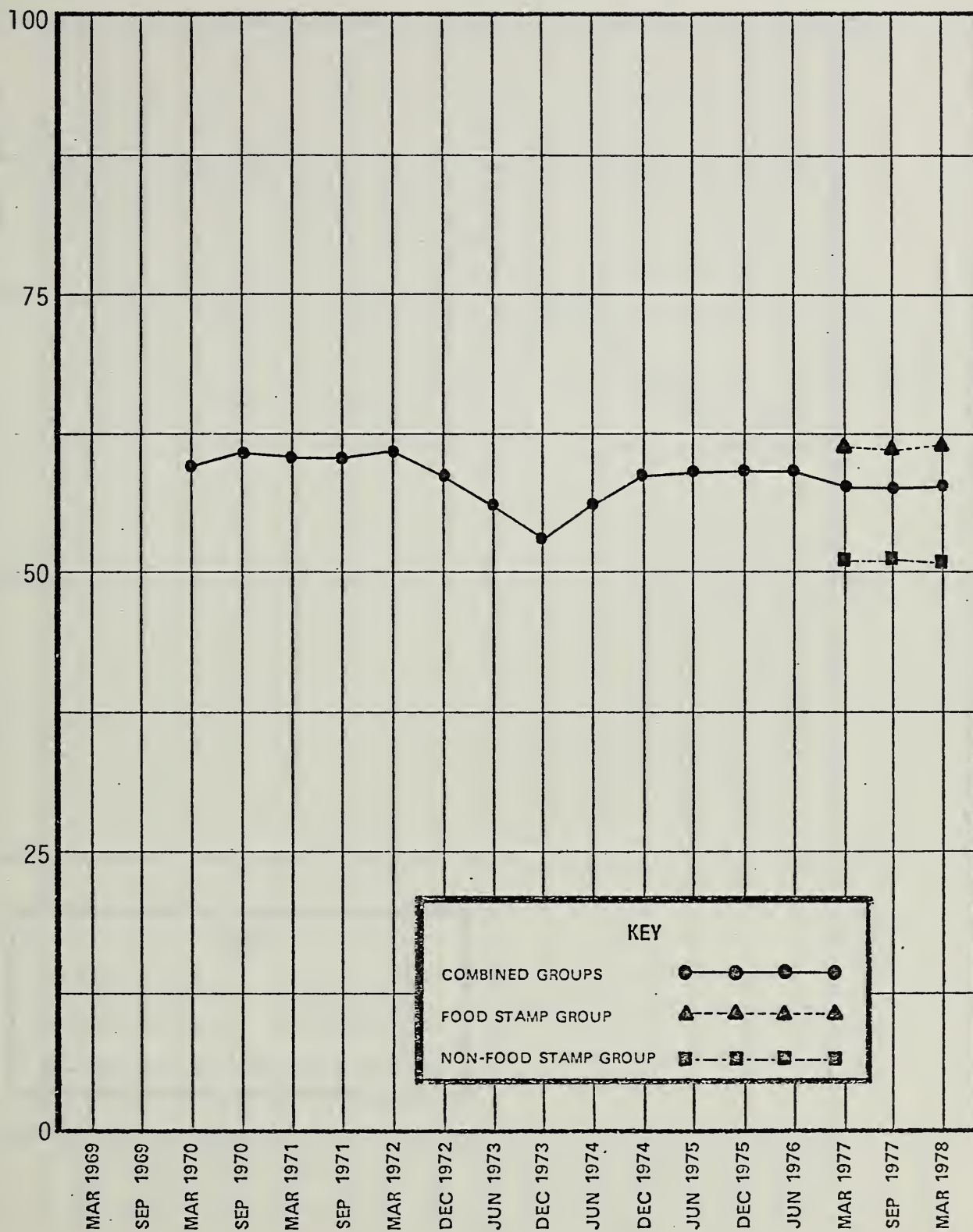


Figure 42: Percent of Family Members Under 19 Years of Age

Percent

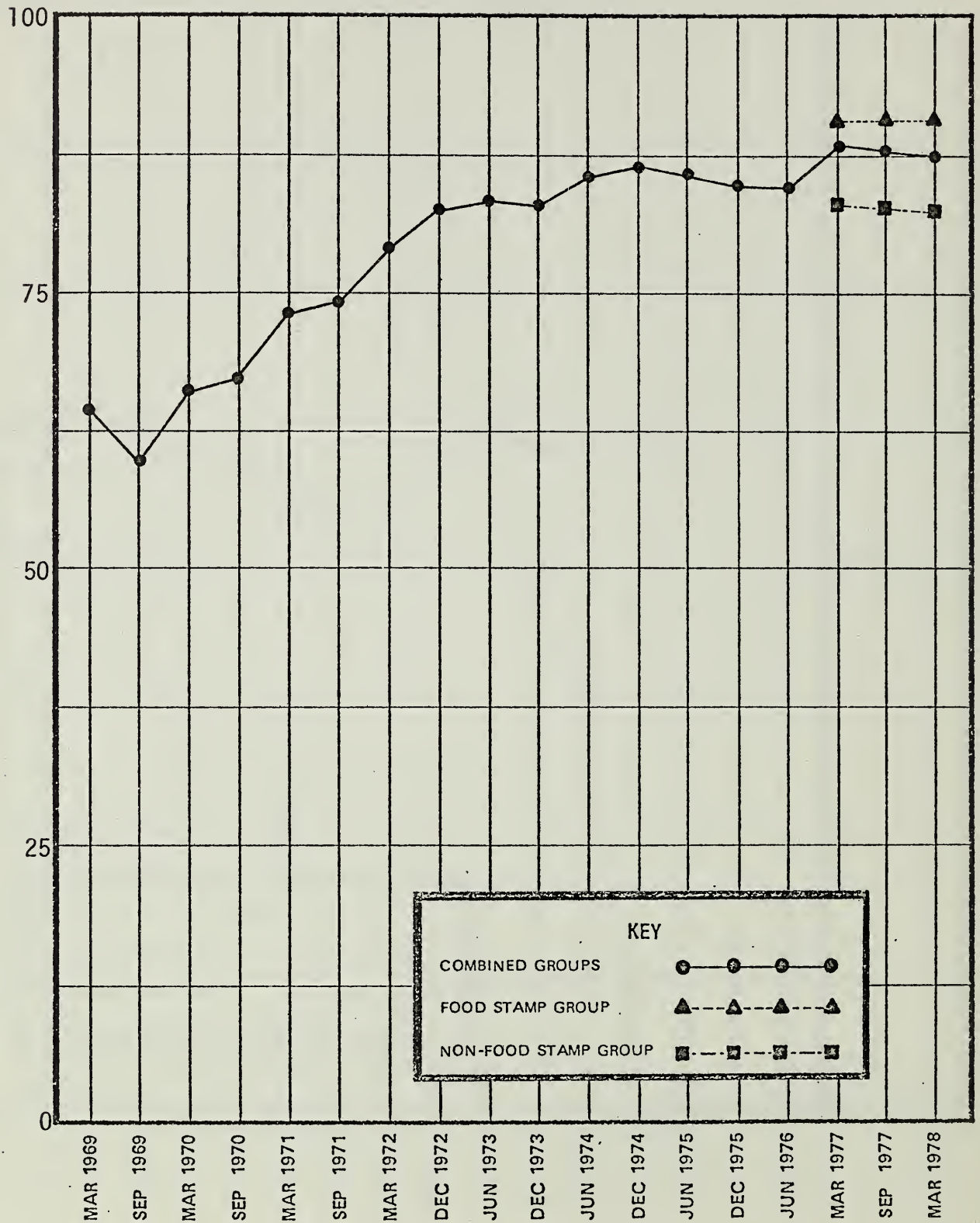


Figure 43: Percentage of Program Family School Children in School Lunch Programs

Percent

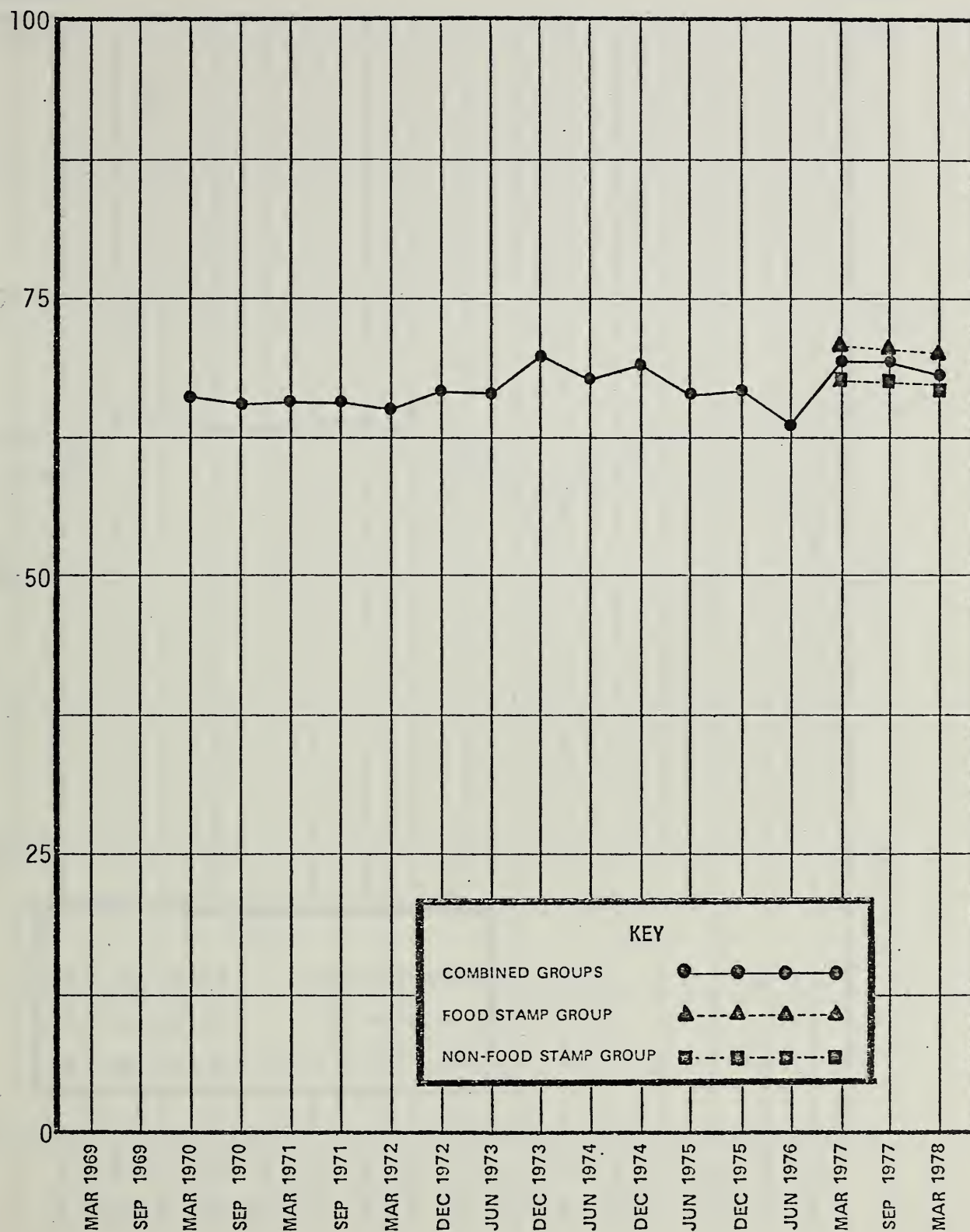


Figure 44: Percent of Program Family Children in School

Percent

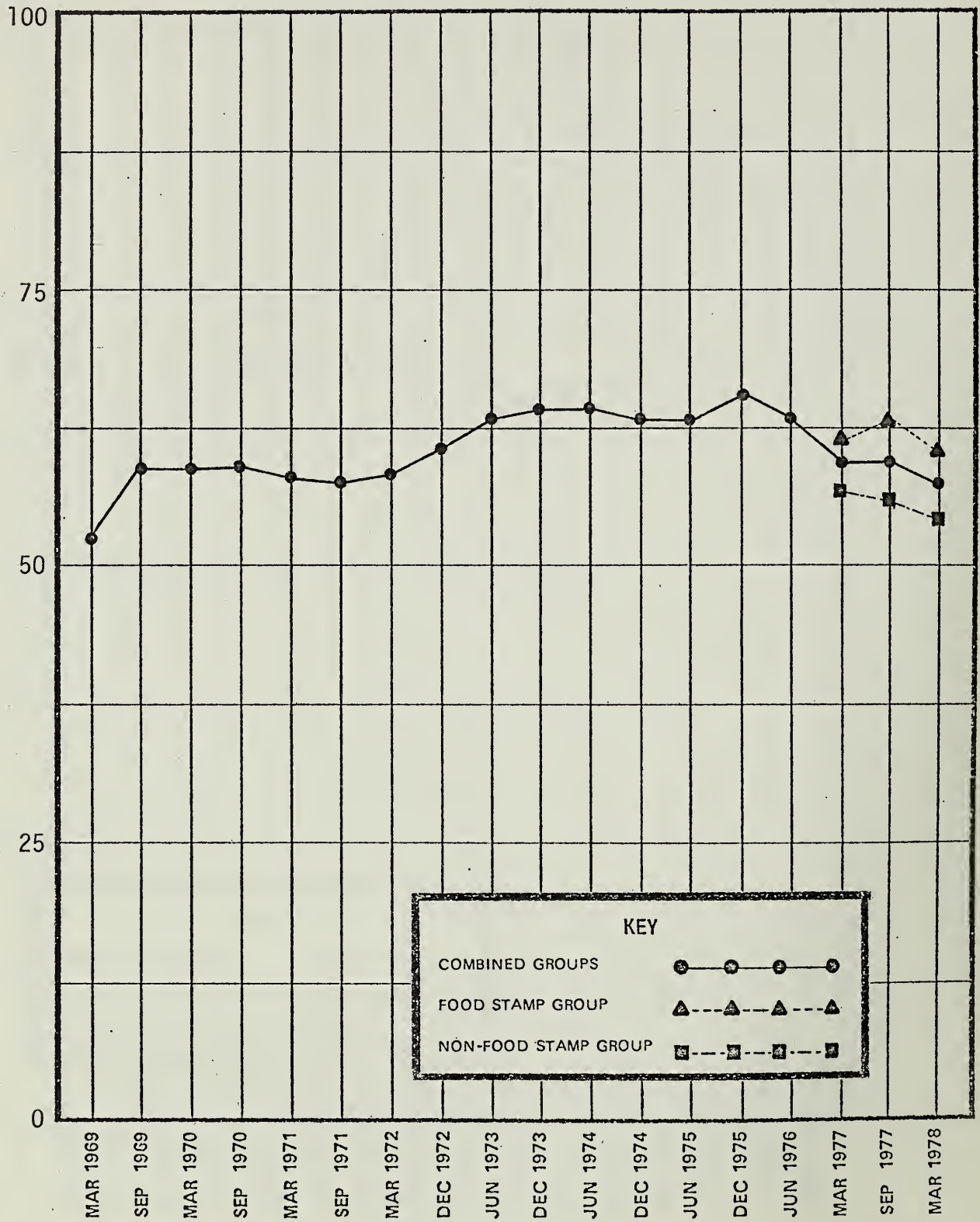


Figure 45: Percent of Families Residing in Urban Areas

Percent

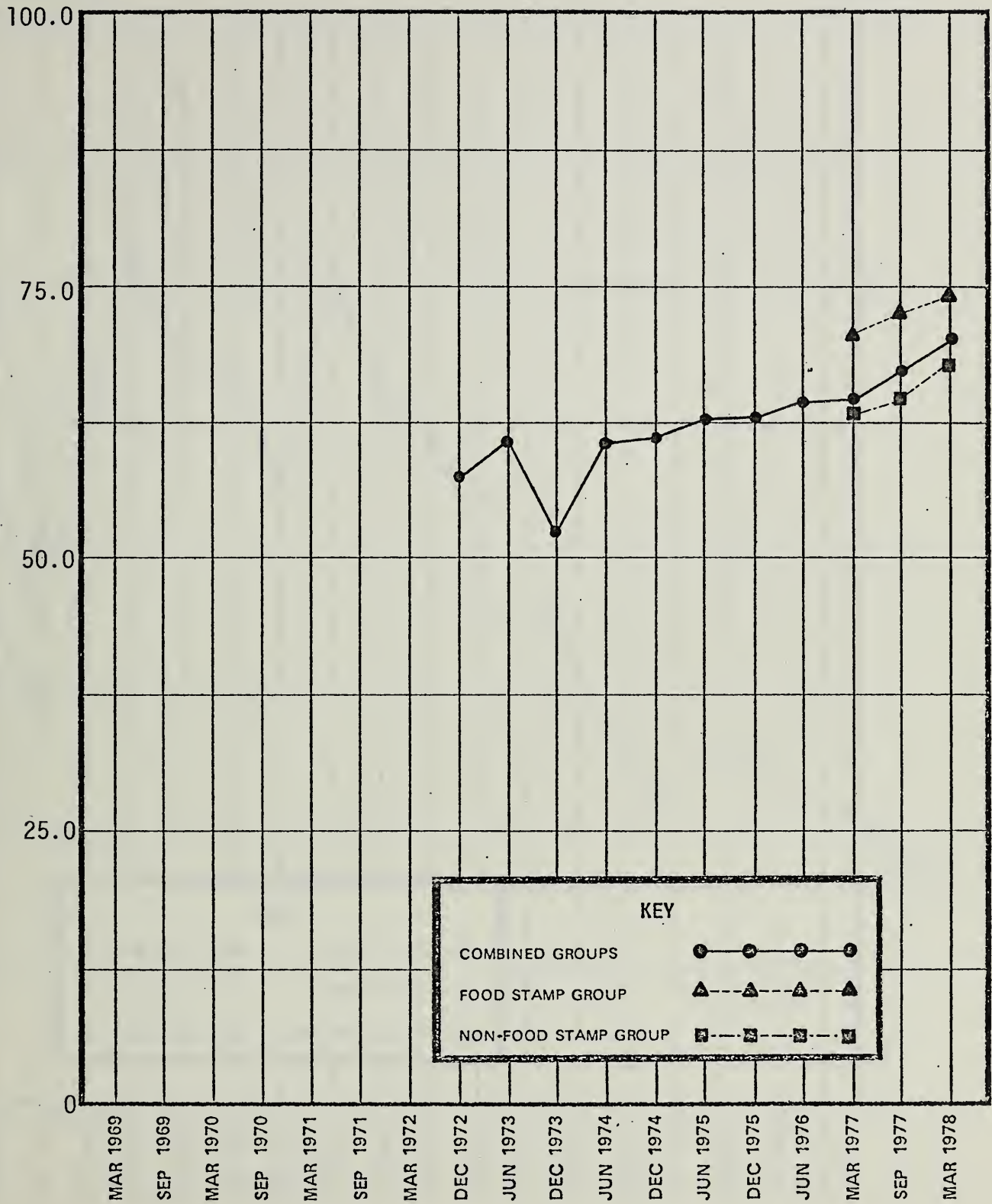


Figure 46: Percent of Program Families Worked with Individually

Percent

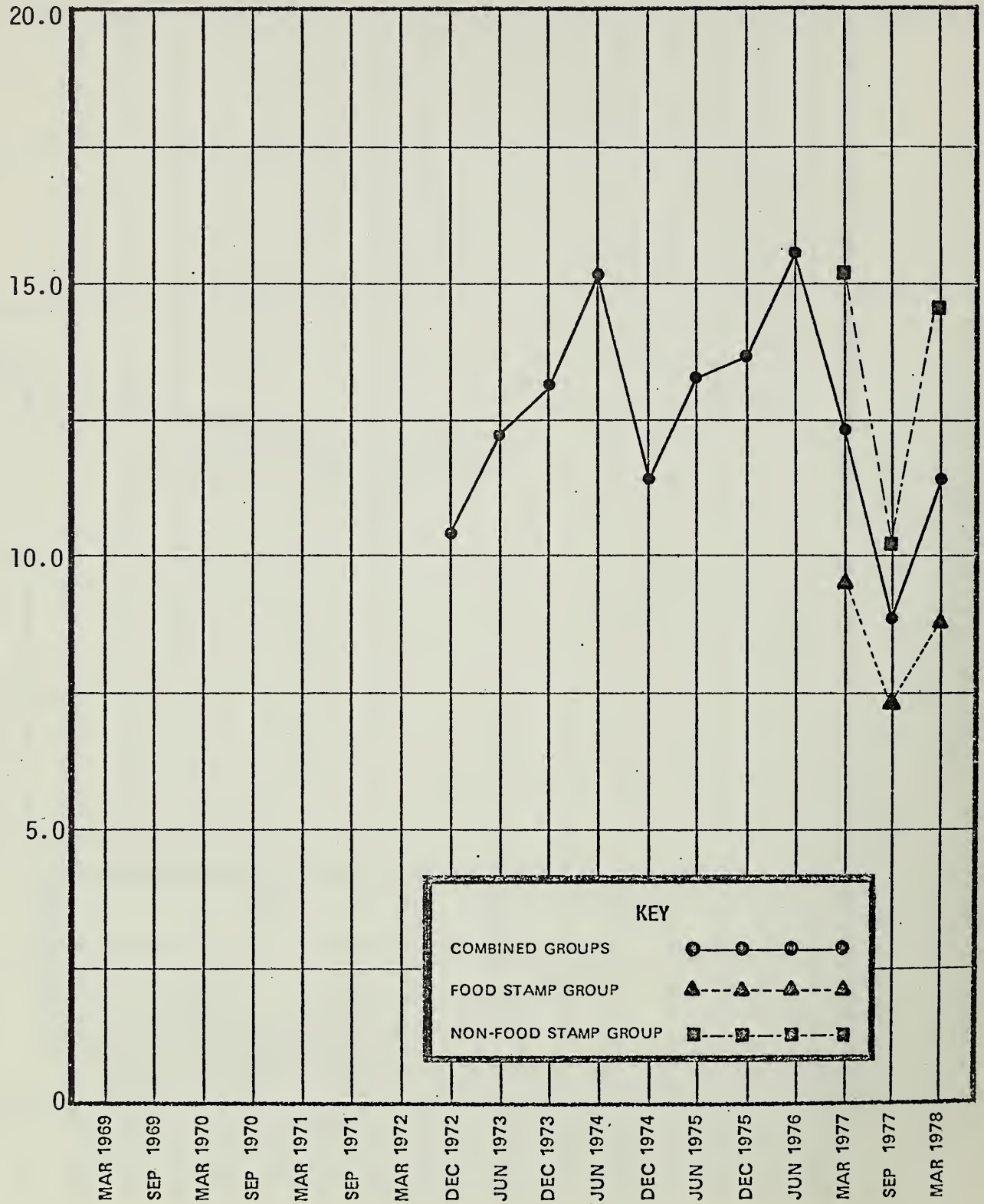


Figure 47: Percent of Program Families Worked with in Groups

Percent

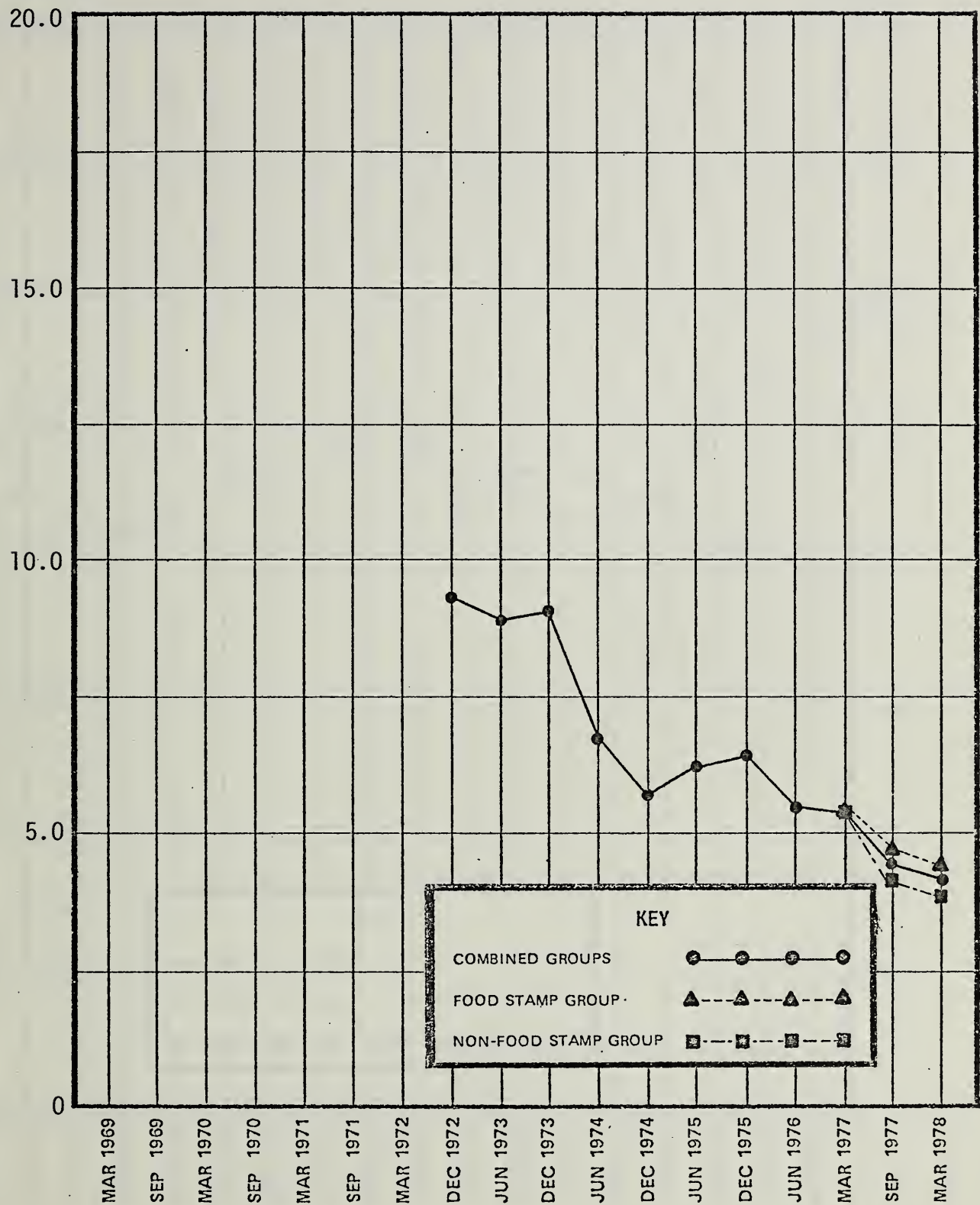


Figure 48: Percent of Program Families Worked with Both Individually and in Groups

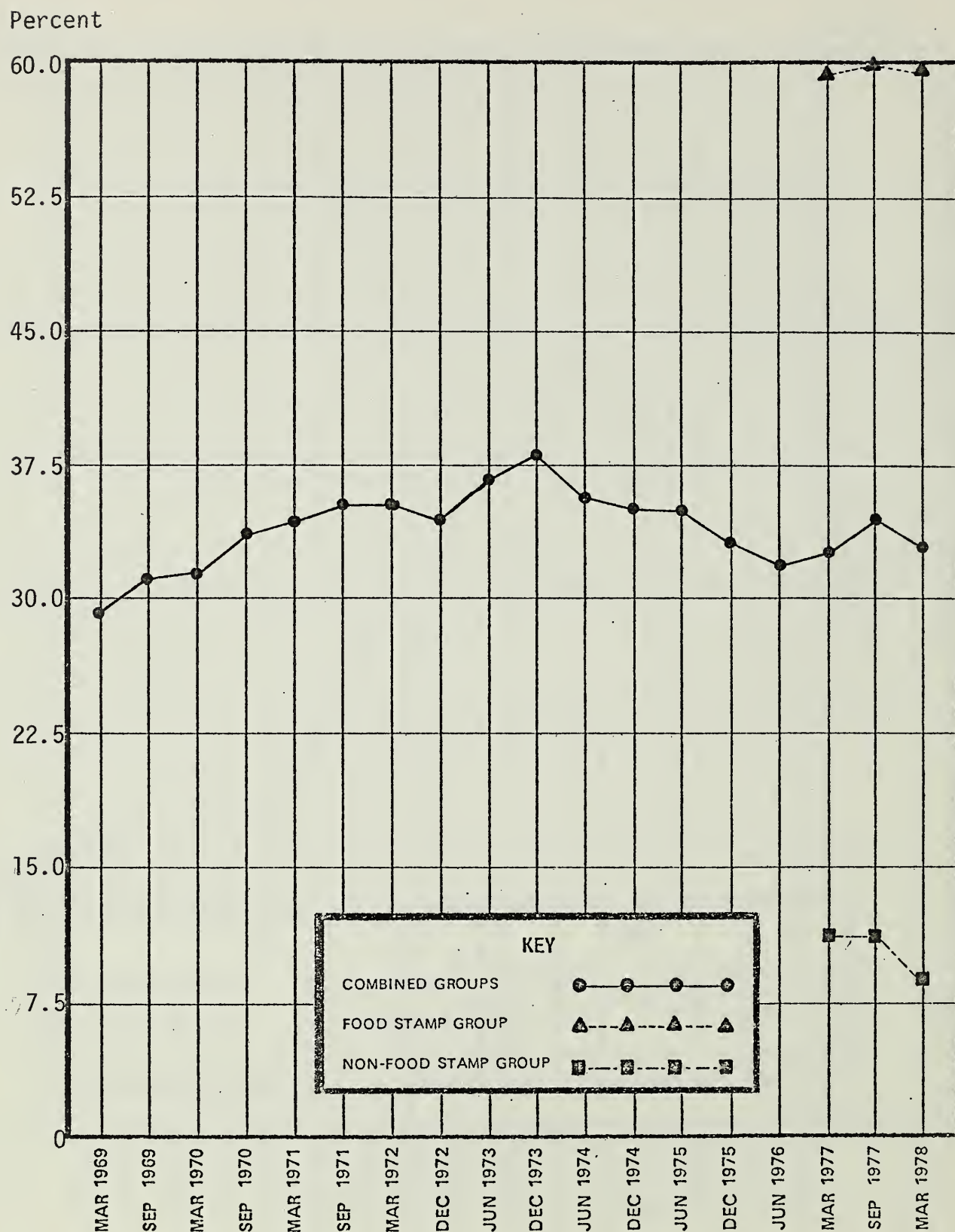


Figure 49: Percentage of Program Families Receiving Welfare.

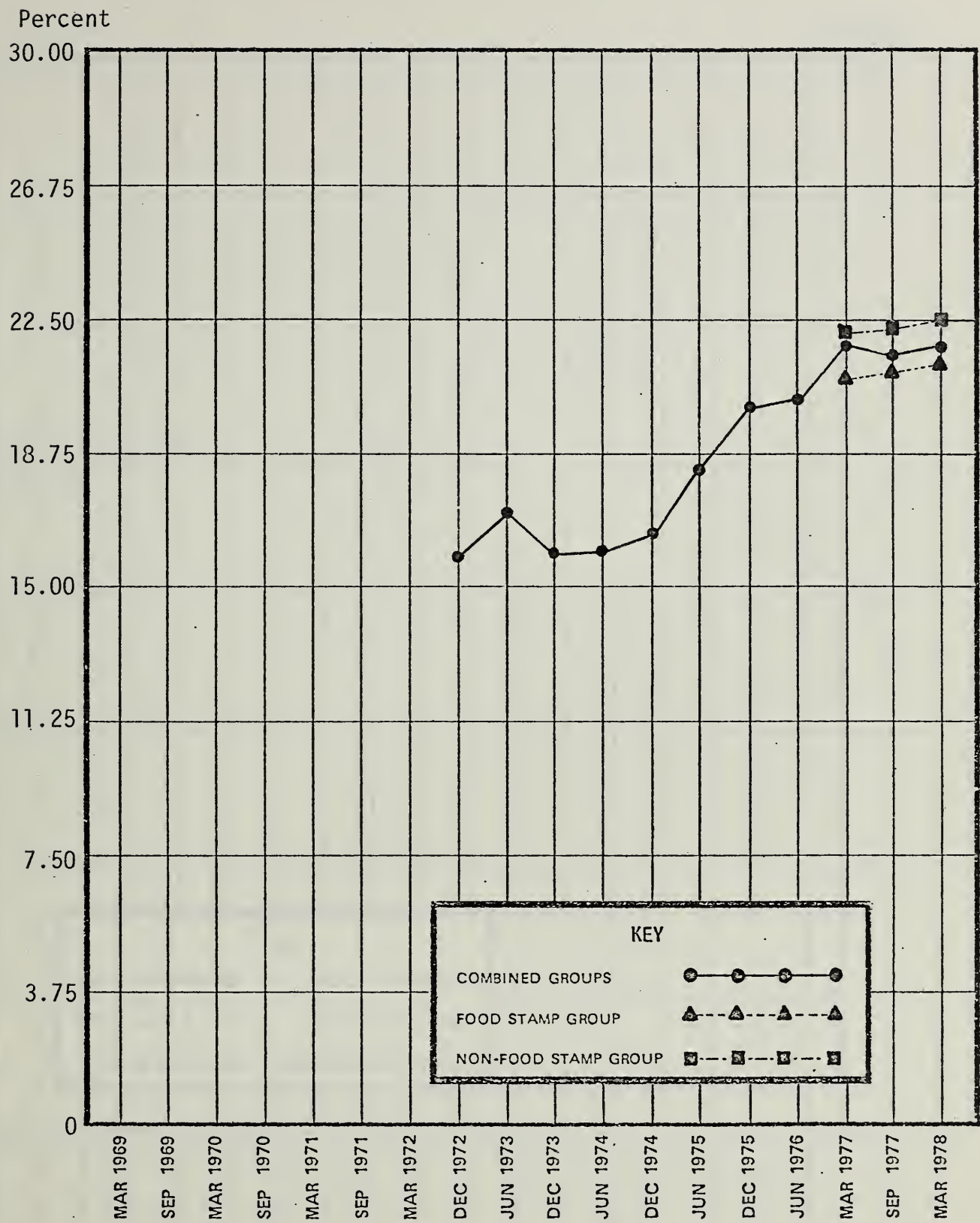


Figure 50: Percentage of Program Homemakers under 24 years of age.

Percent

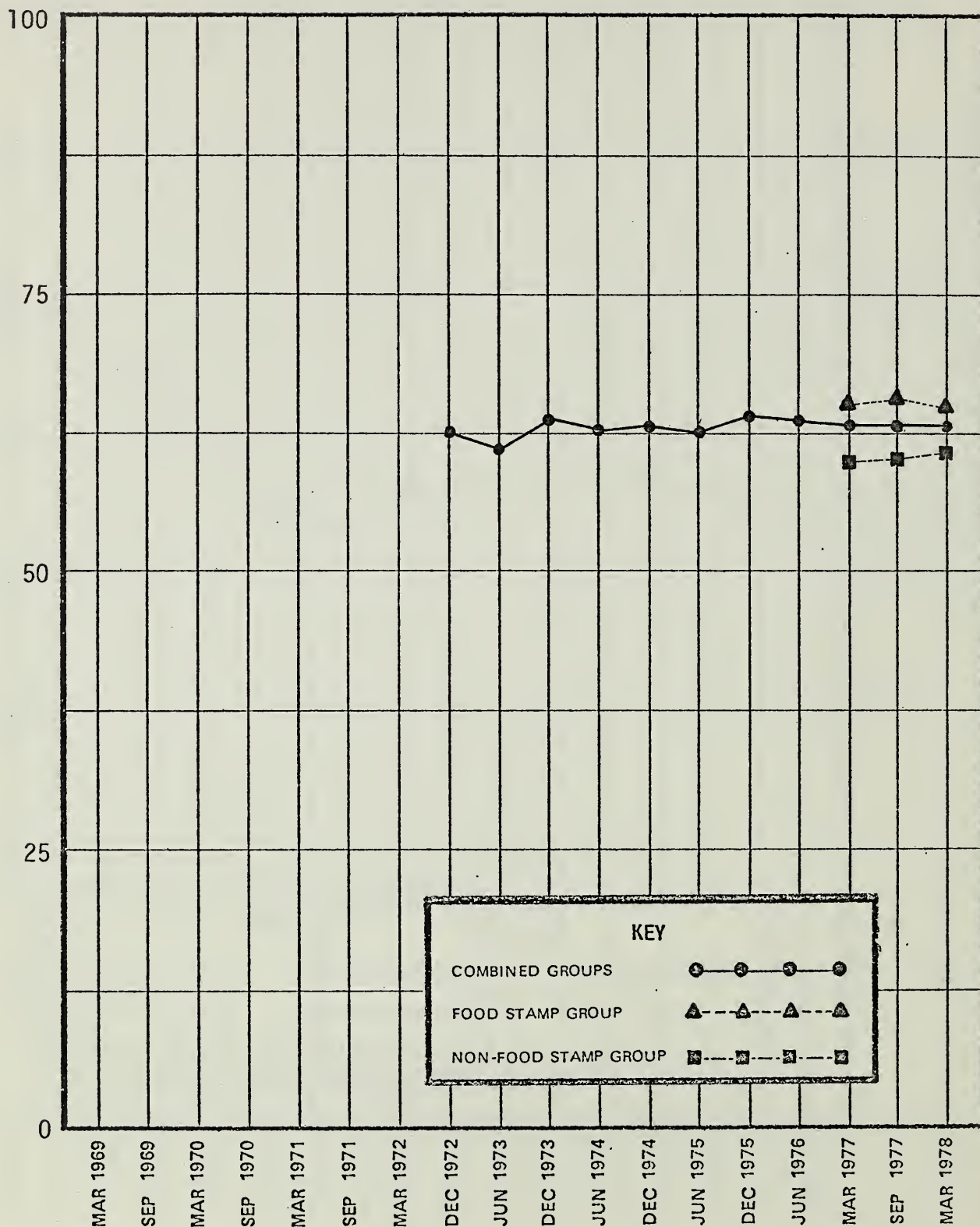


Figure 51: Percentage of Program Homemakers 25-55 Years of Age.

Percent

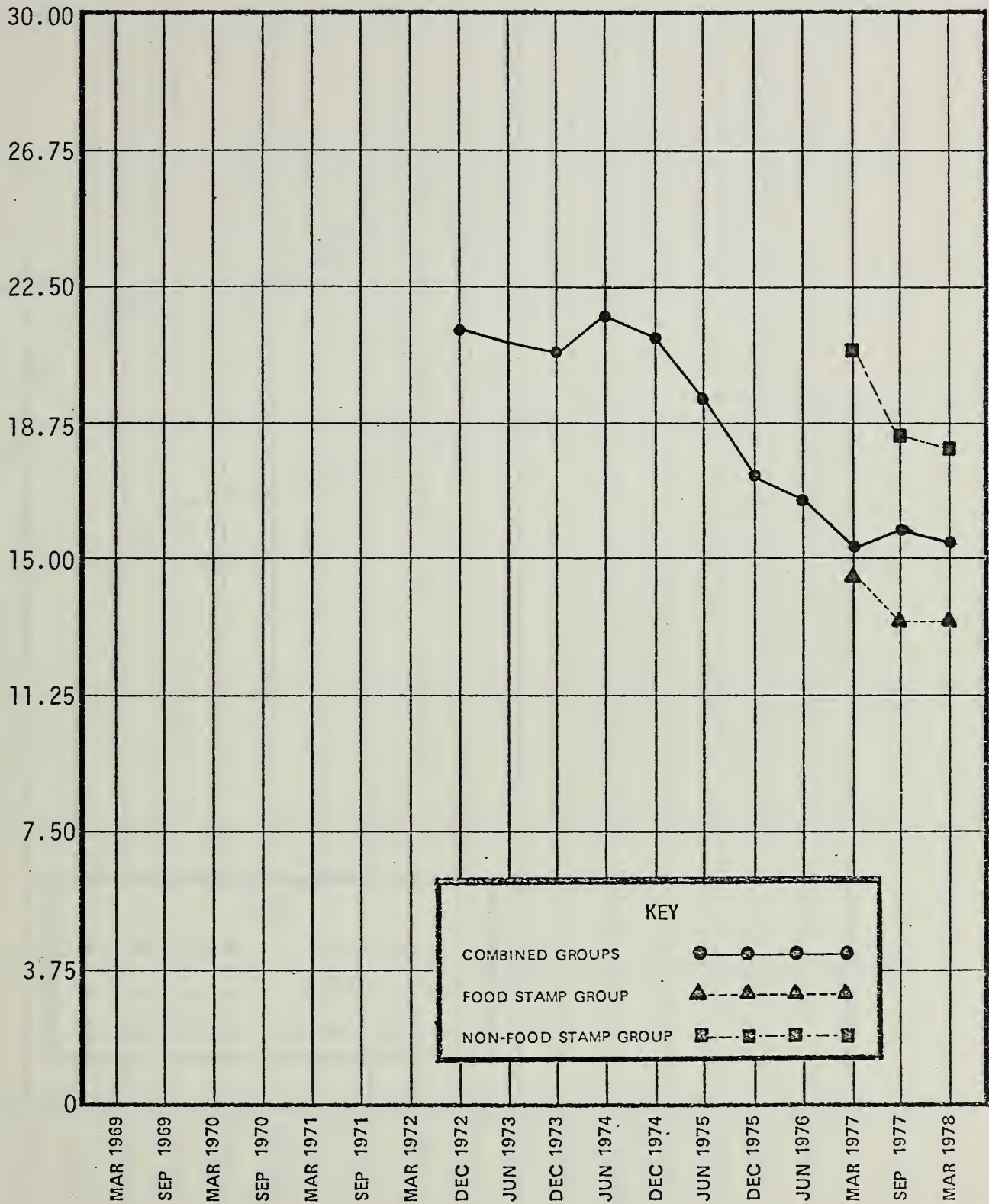


Figure 52: Percentage of Program Homemakers Older than 55 years.

Percent

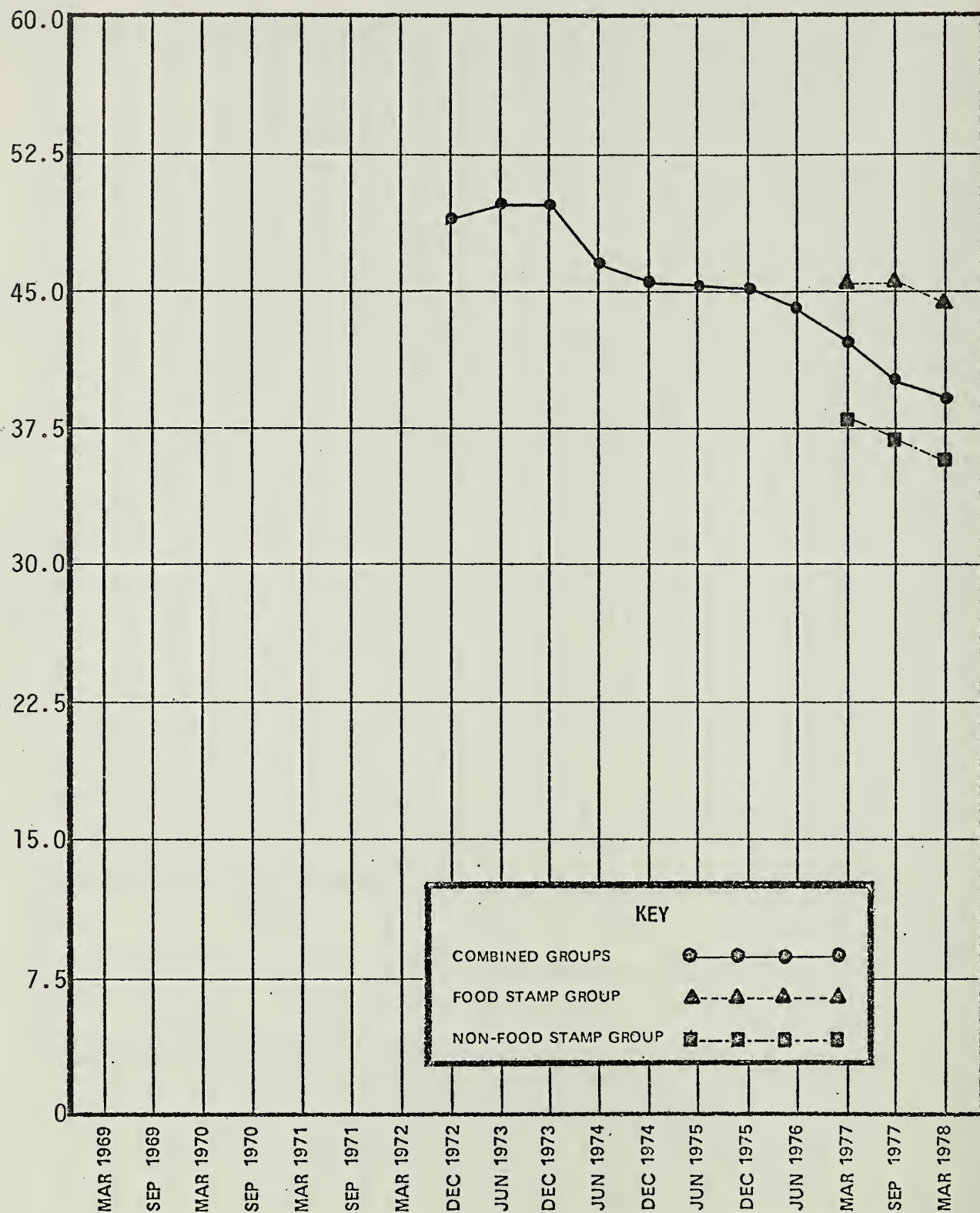


Figure 53: Participating Program Homemakers with Less Than an Eighth Grade Education

Percent

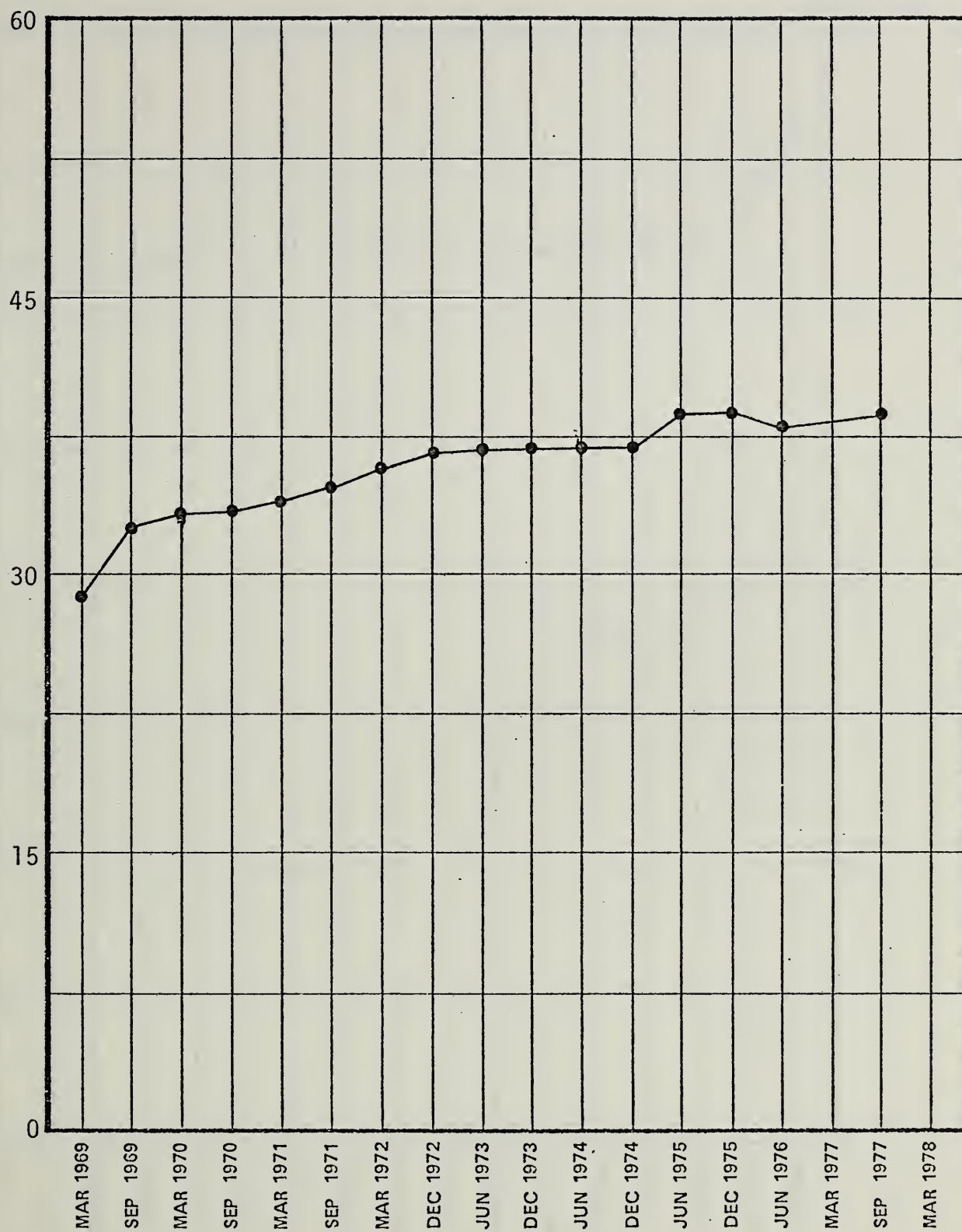


Figure 54: Percentage of White Program Homemakers

Percent

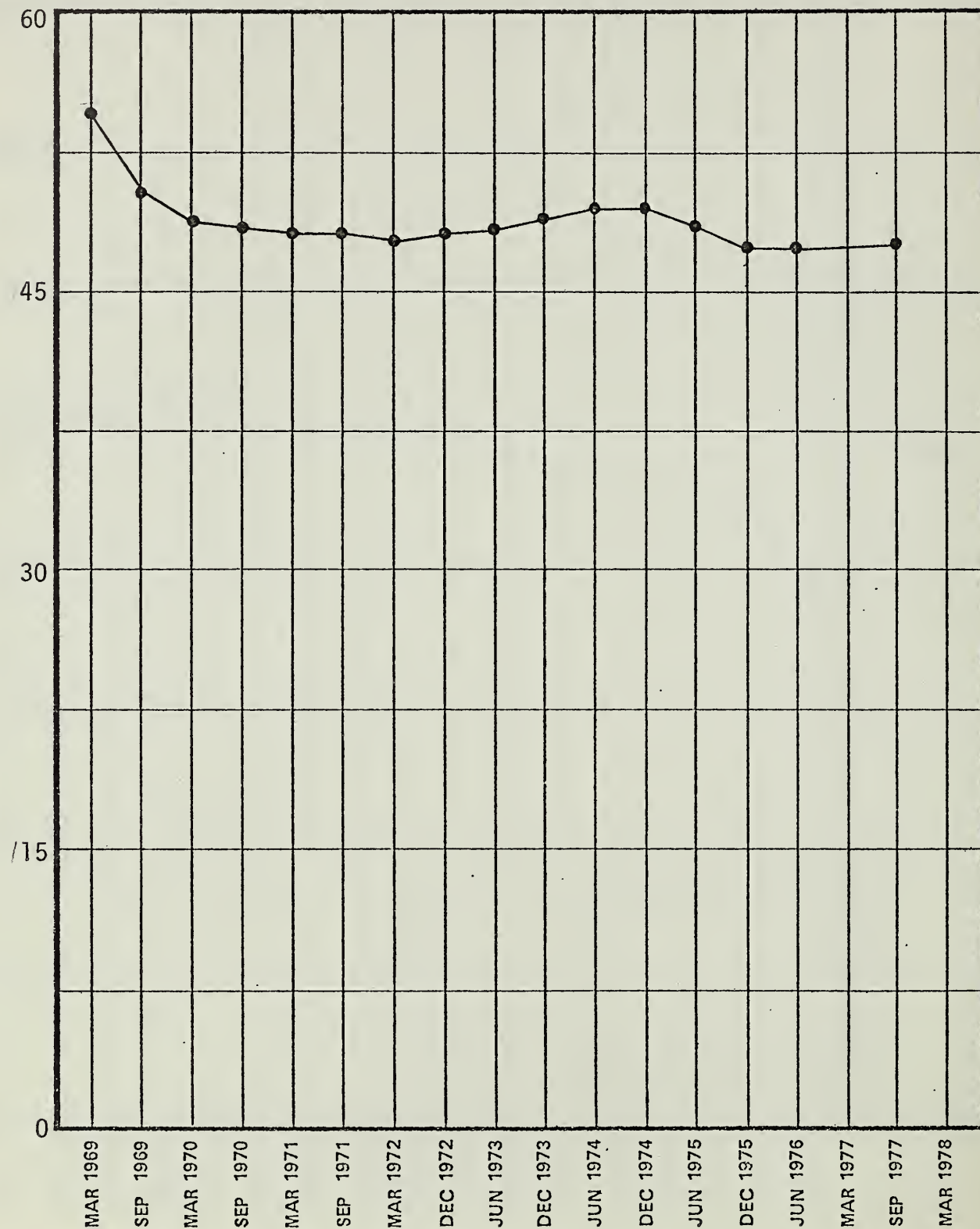


Figure 55: Percentage of Black Program Homemakers

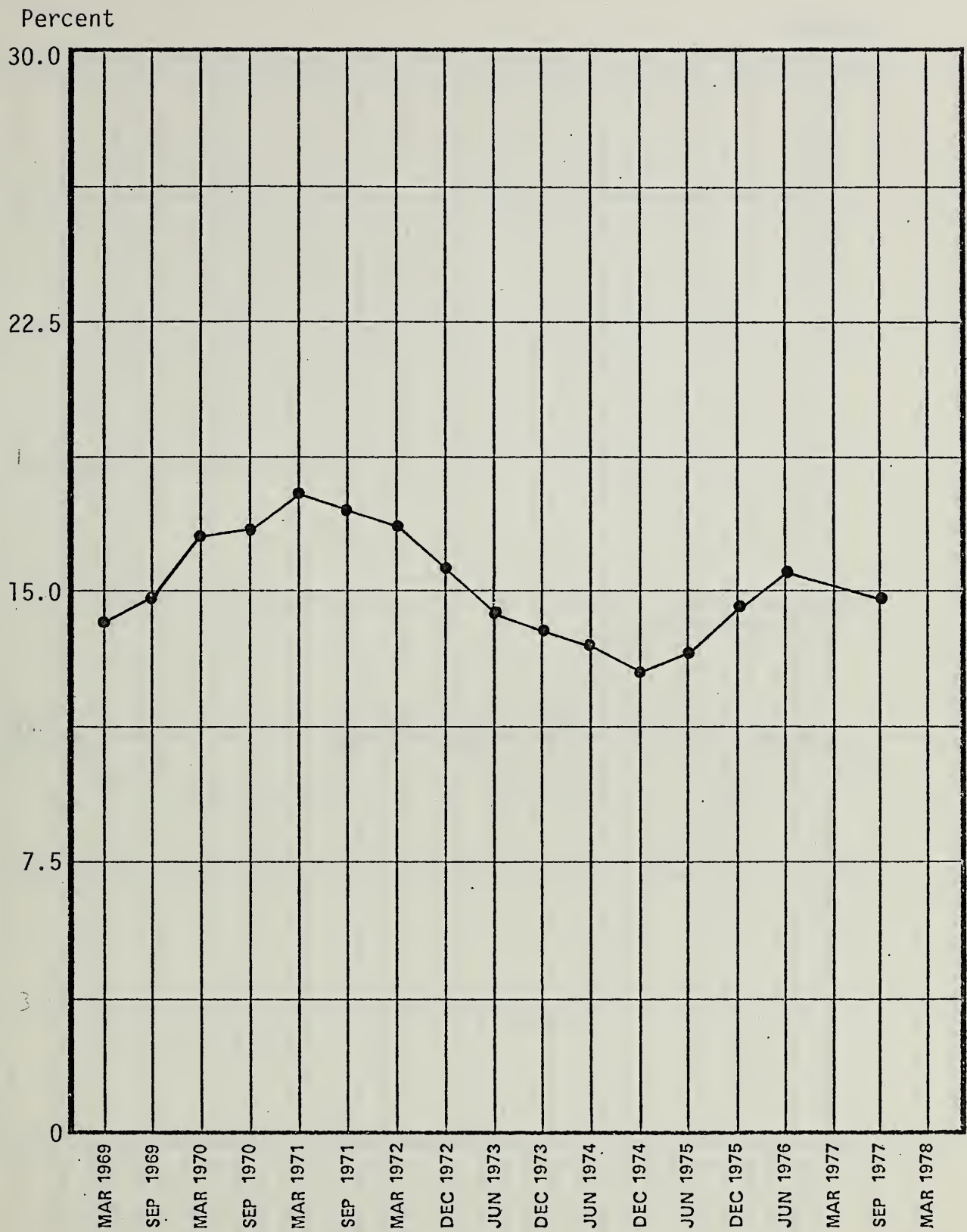


Figure 56: Percentage of Spanish-Surname Program Homemakers

Percent

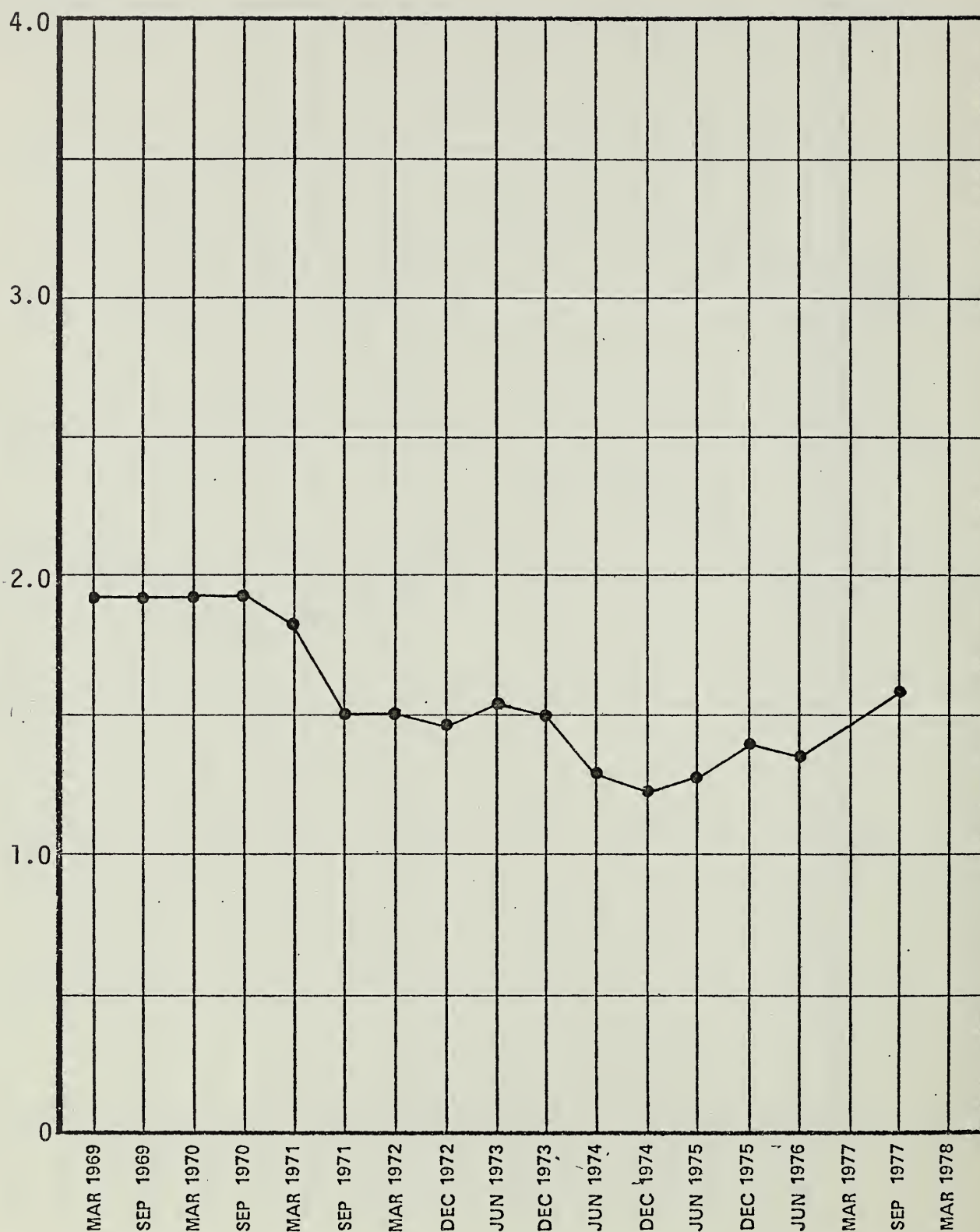


Figure 57: Percentage of American Indian Program Homemakers

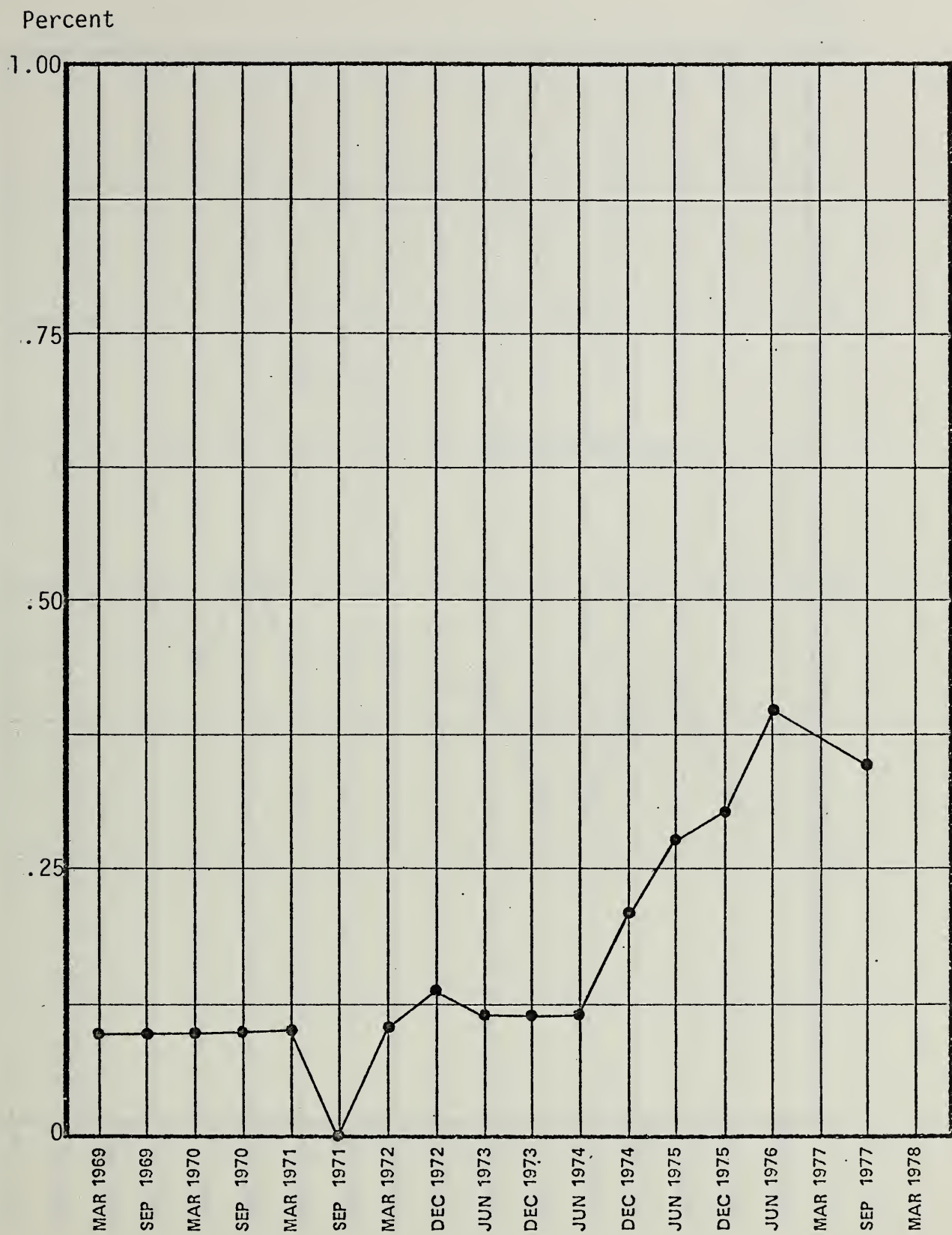


Figure 58: Percentage of Oriental Program Homemakers

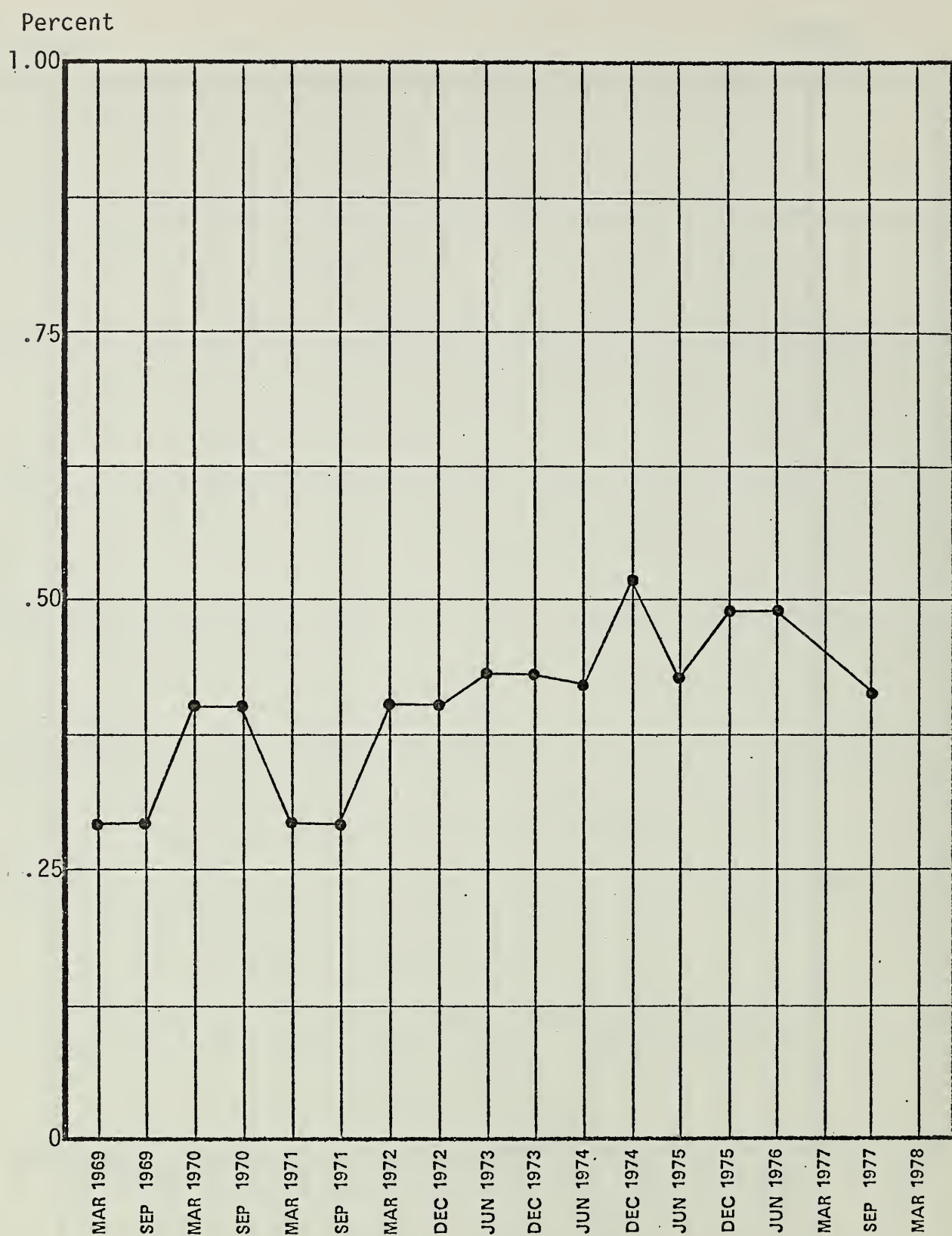


Figure 59: Percentage of "Other" Program Homemakers

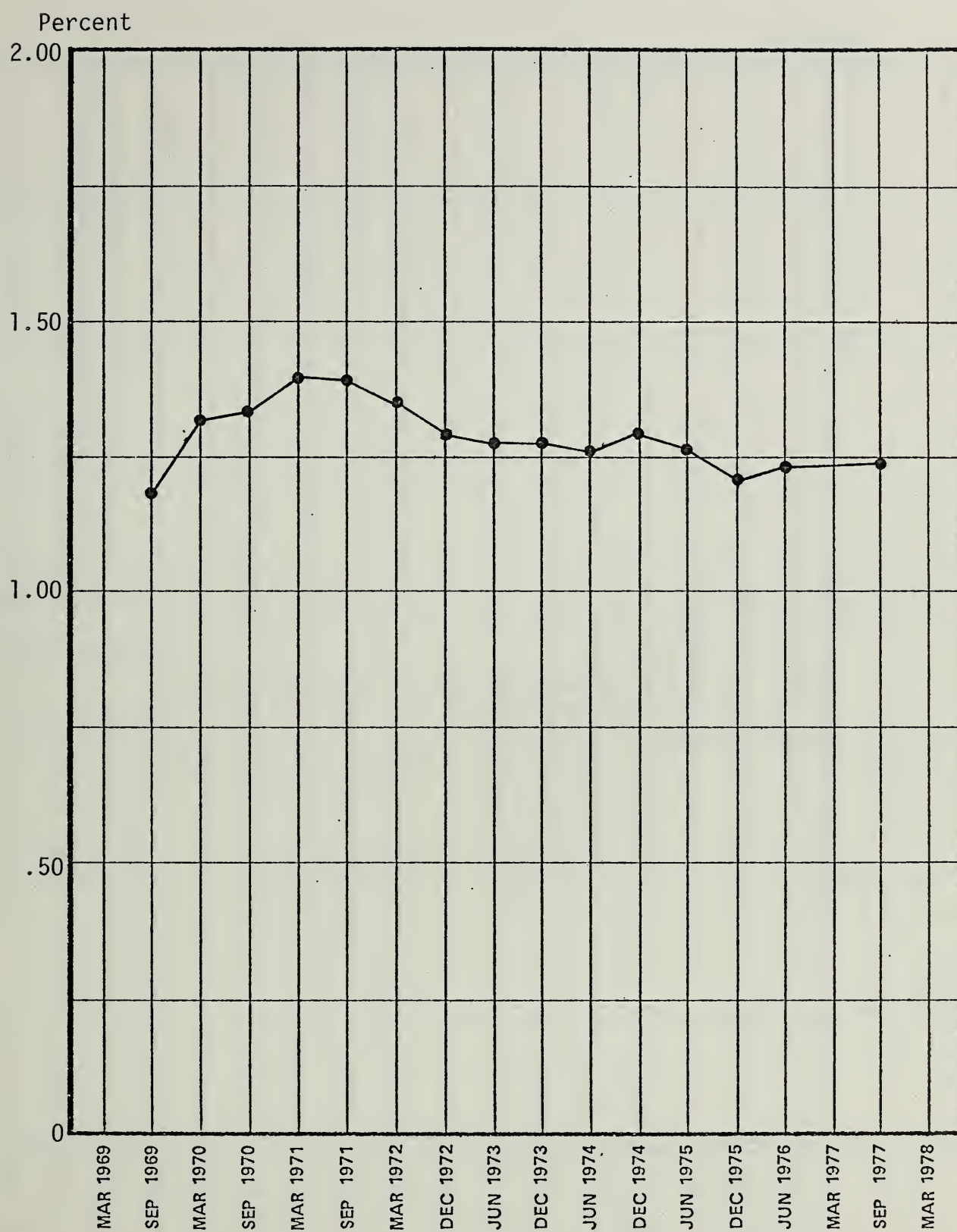


Figure 60: Ratio of Percentage of White Aides to Percentage of White Homemakers

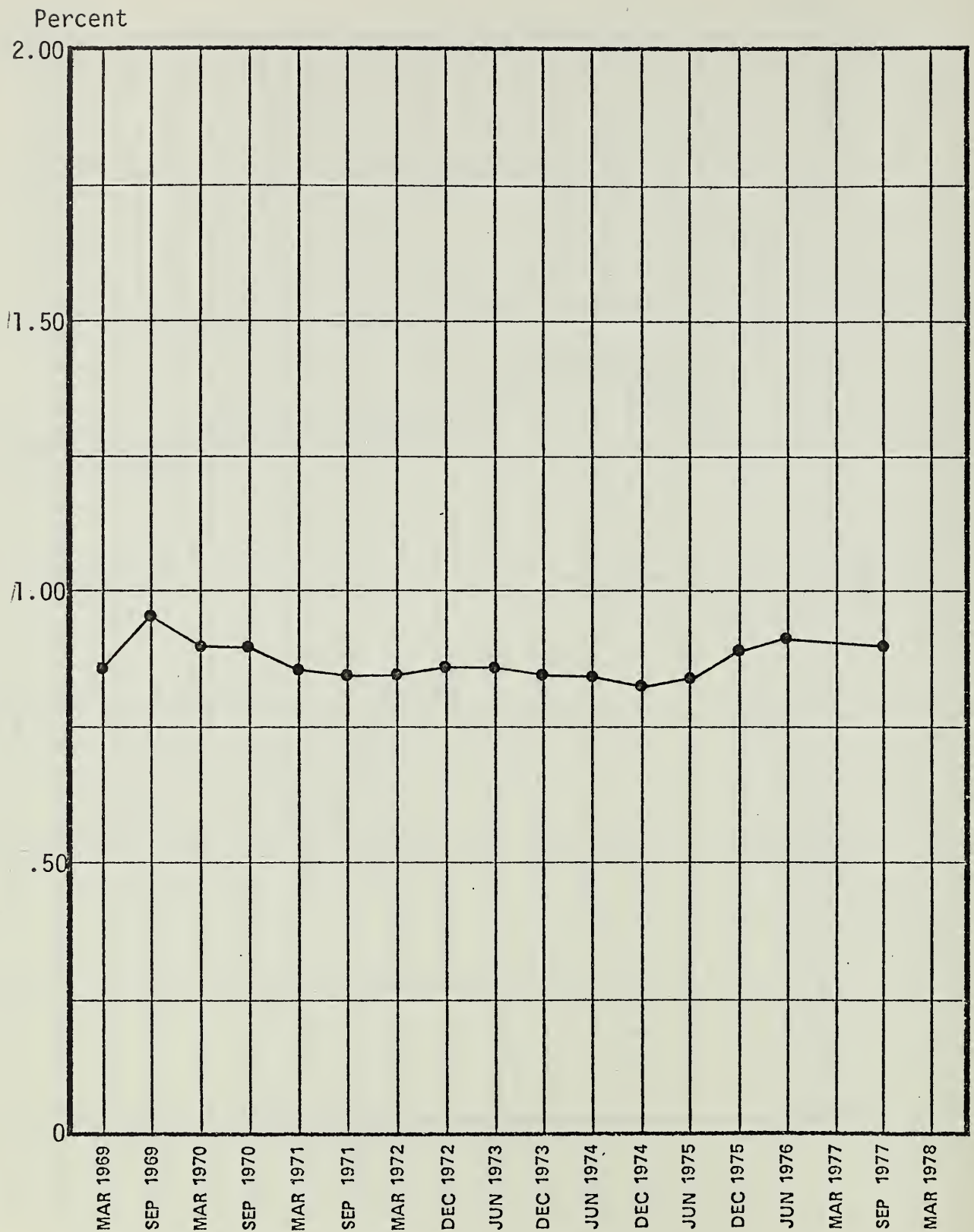


Figure 61: Ratio of Percentage of Black Aides to Percentage of Black Homemakers

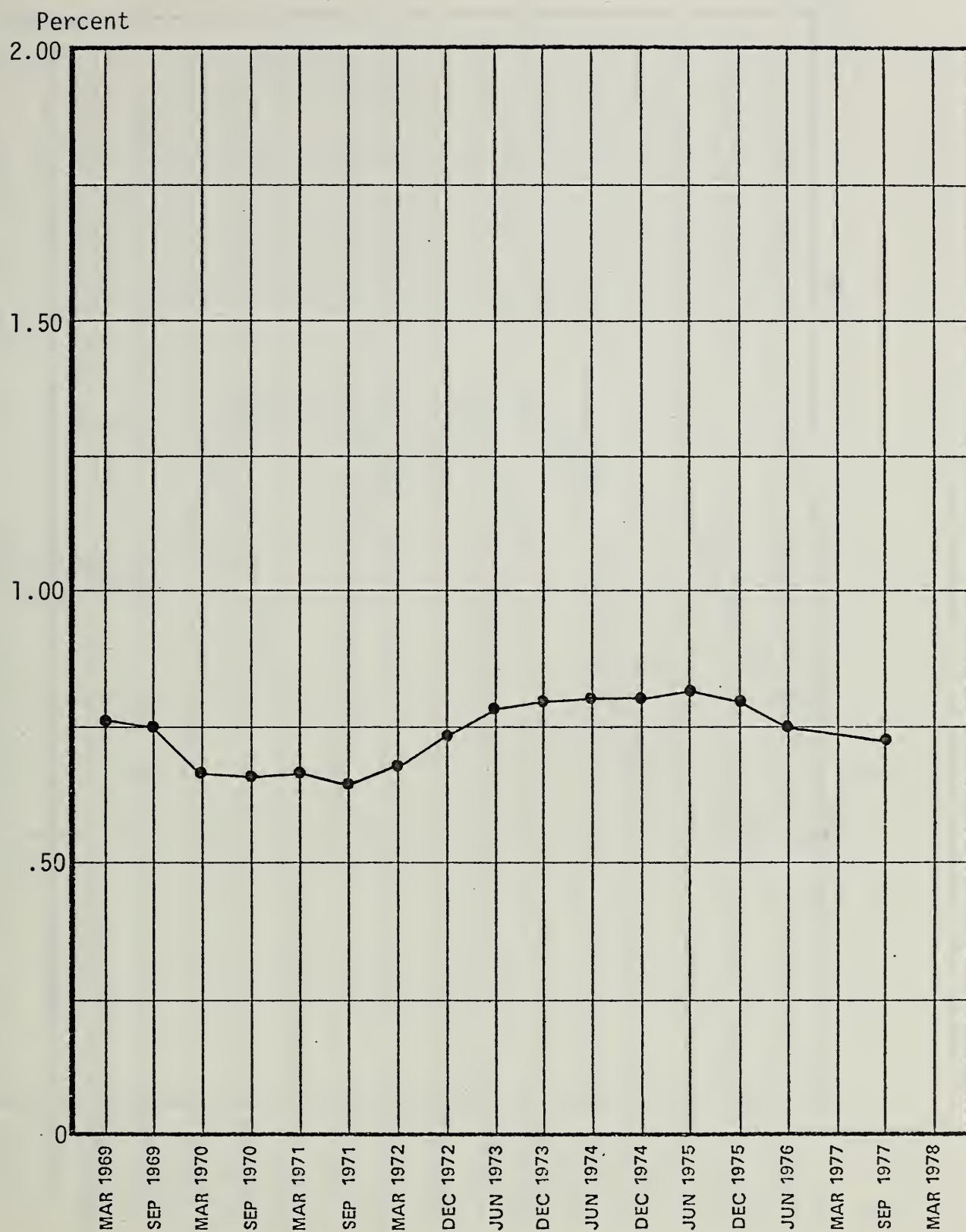


Figure 62: Ratio of Percentage of Spanish-Surname Aides to Percentage of Spanish-Surname Homemakers

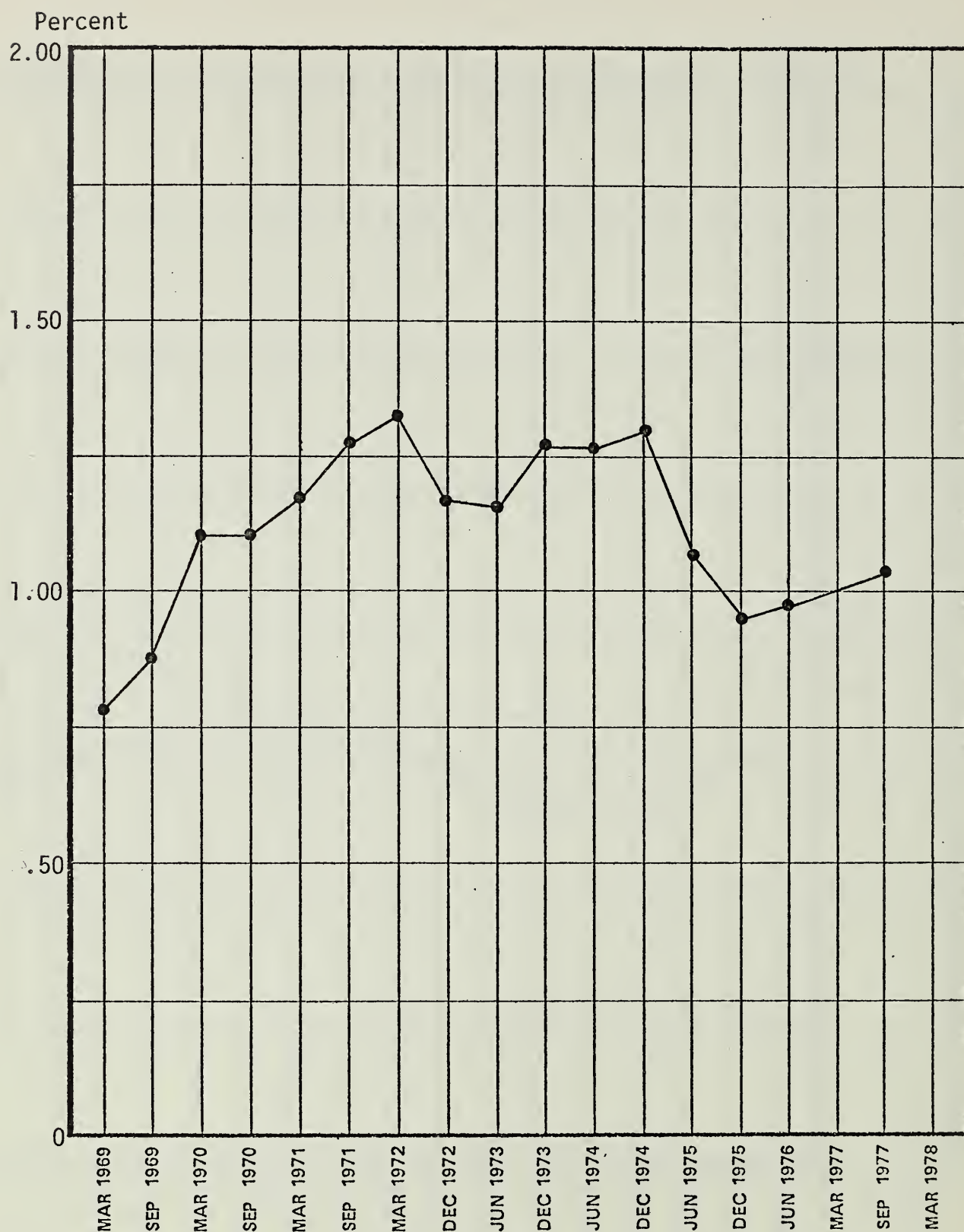


Figure 63: Ratio of Percentage of American Indian Aides to Percentage of American Indian Homemakers

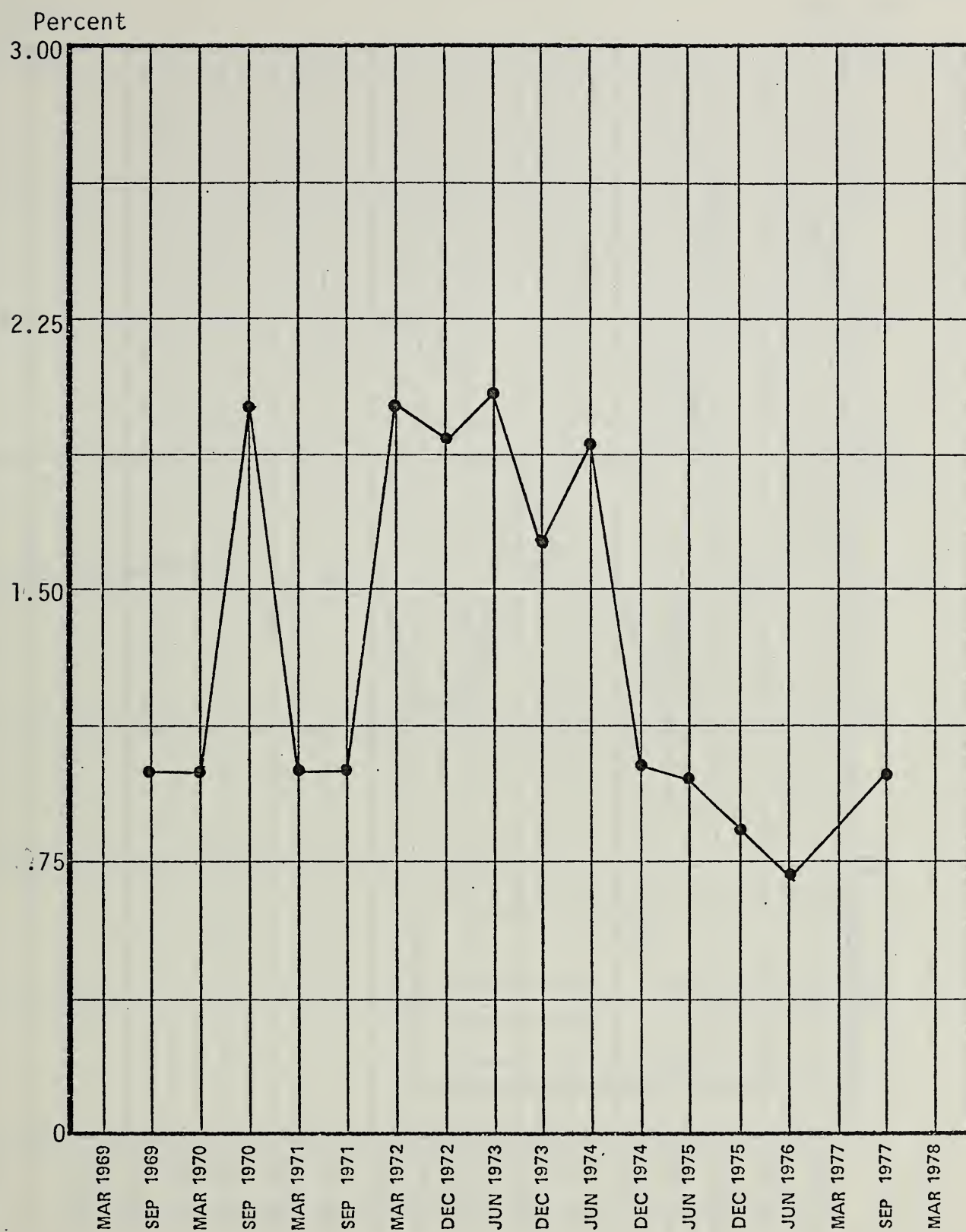


Figure 64: Ratio of Percentage of Oriental Aides to Percentage of Oriental Homemakers



Figure 65: Ratio of Percentage of "Other" Aides to Percentage of "Other" Homemakers.

Percent

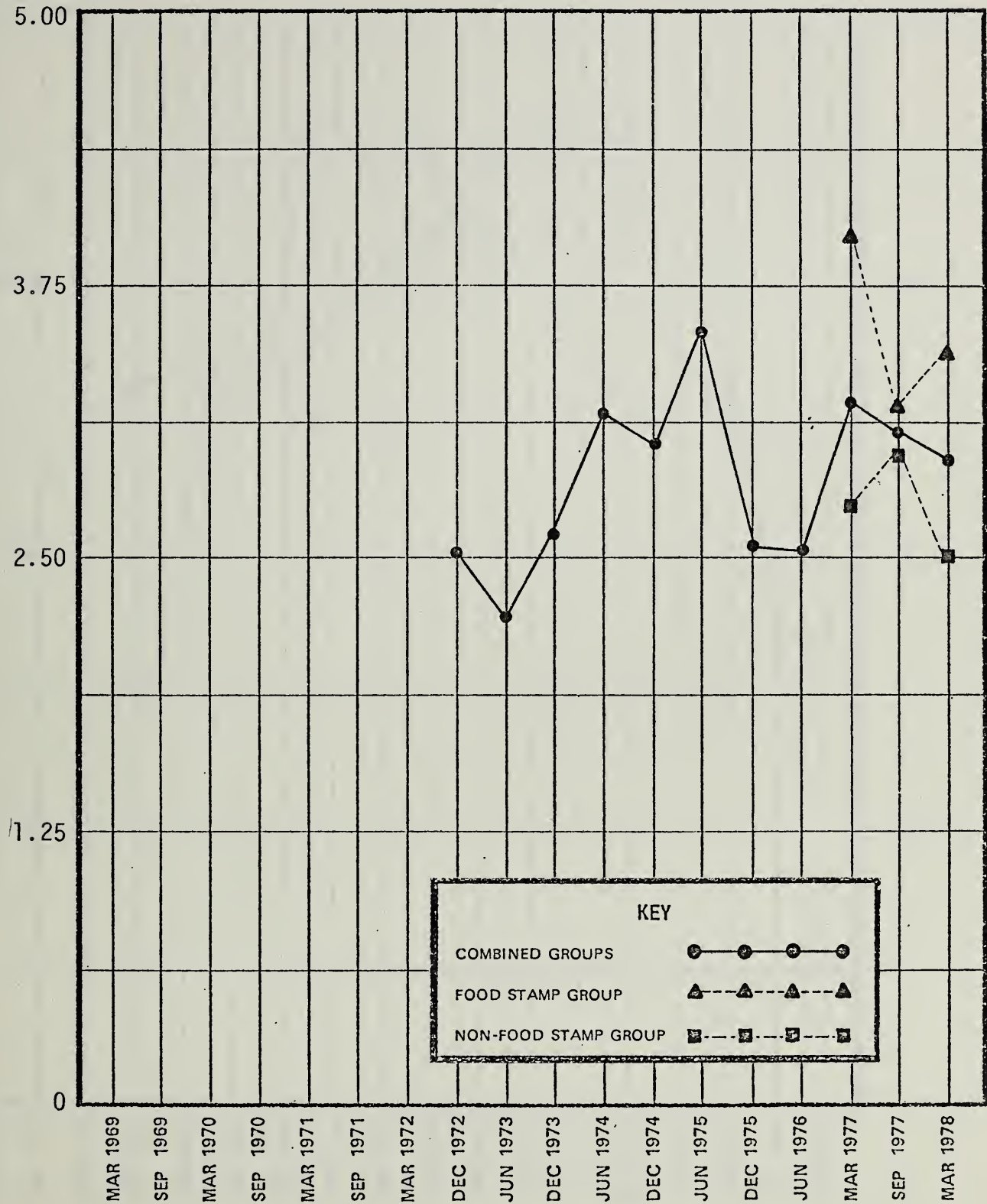


Figure 66: Percent of Program Families Receiving FHA Assistance

Aides

10,000

7,500

5,000

2,500

0

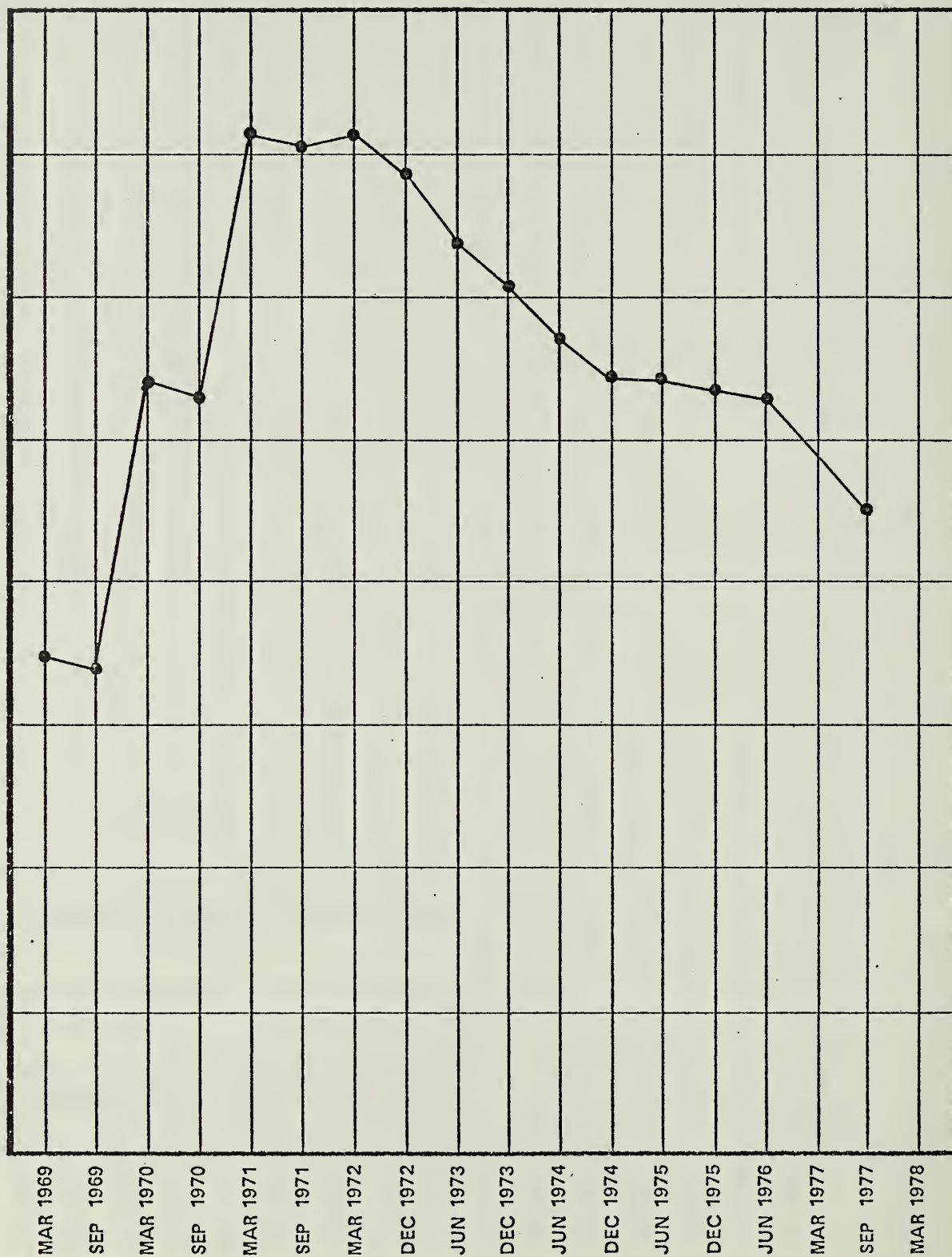


Figure 67: Total EFNEP Aides at the End of the Reporting Period

Aides
8,000

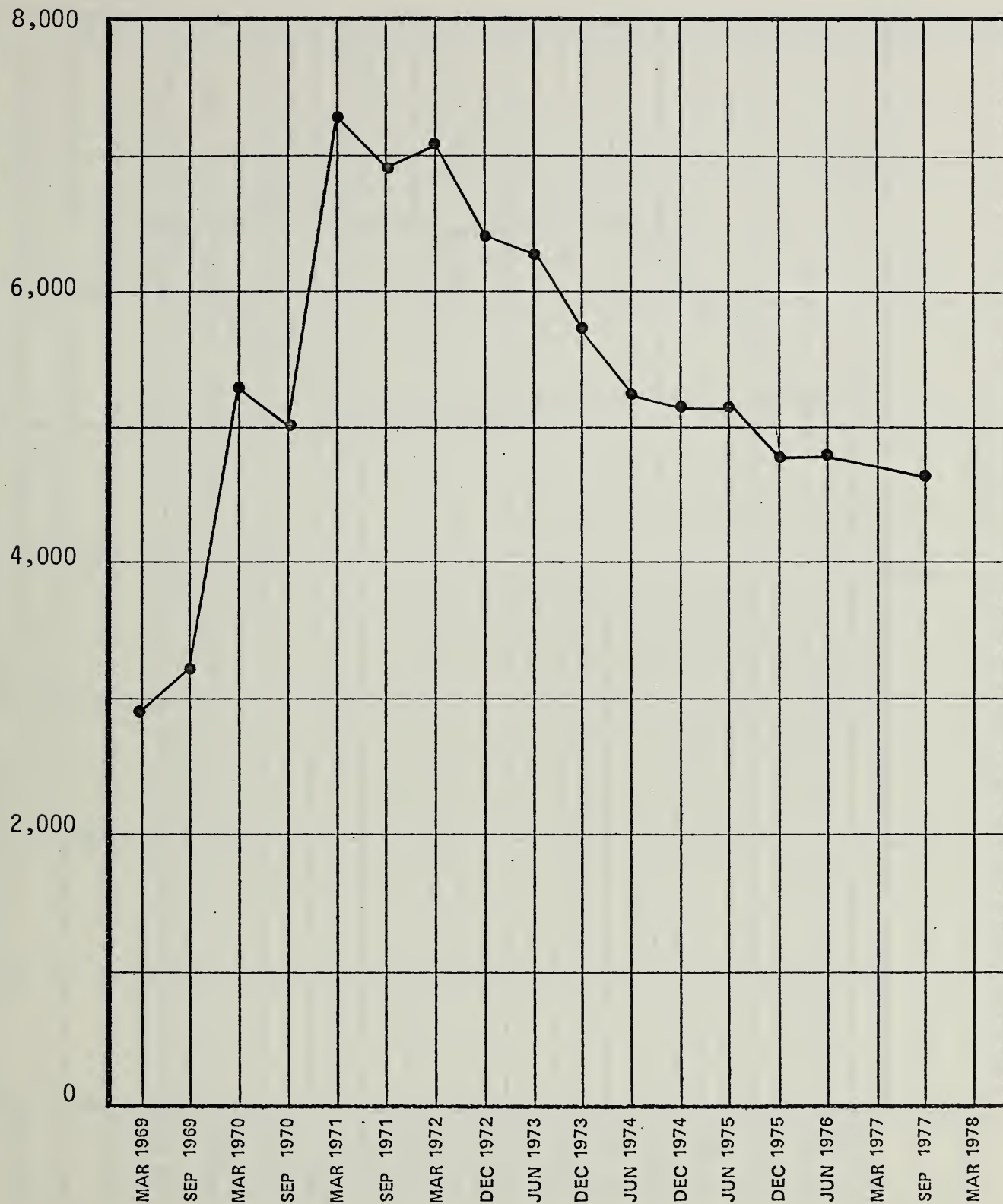


Figure 68: Total Full-time Equivalent (FTE) Aides
at the End of the Reporting Period

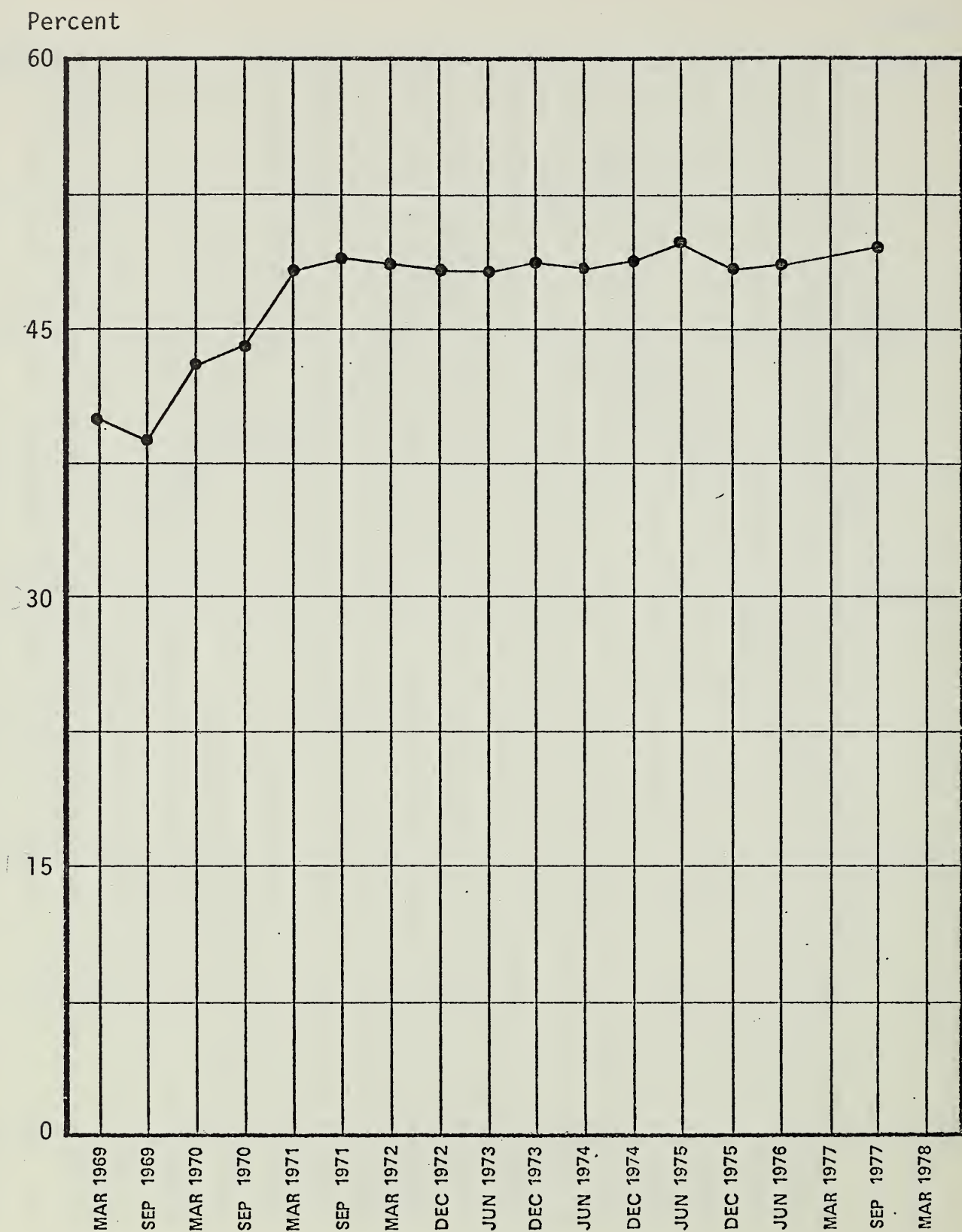


Figure 69: Percentage of White Aides.

Percent

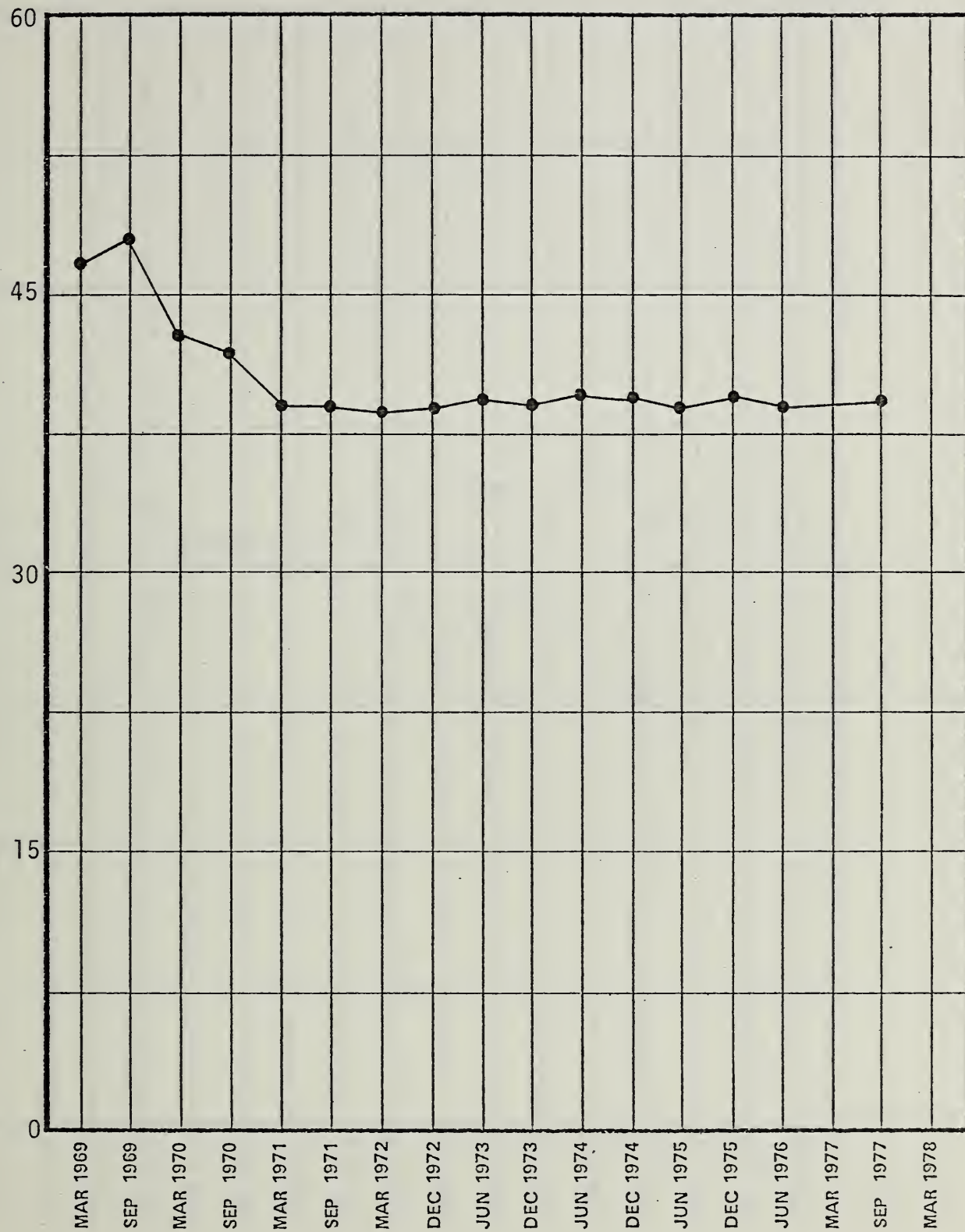


Figure 70: Percentage of Black Aides.

Percent

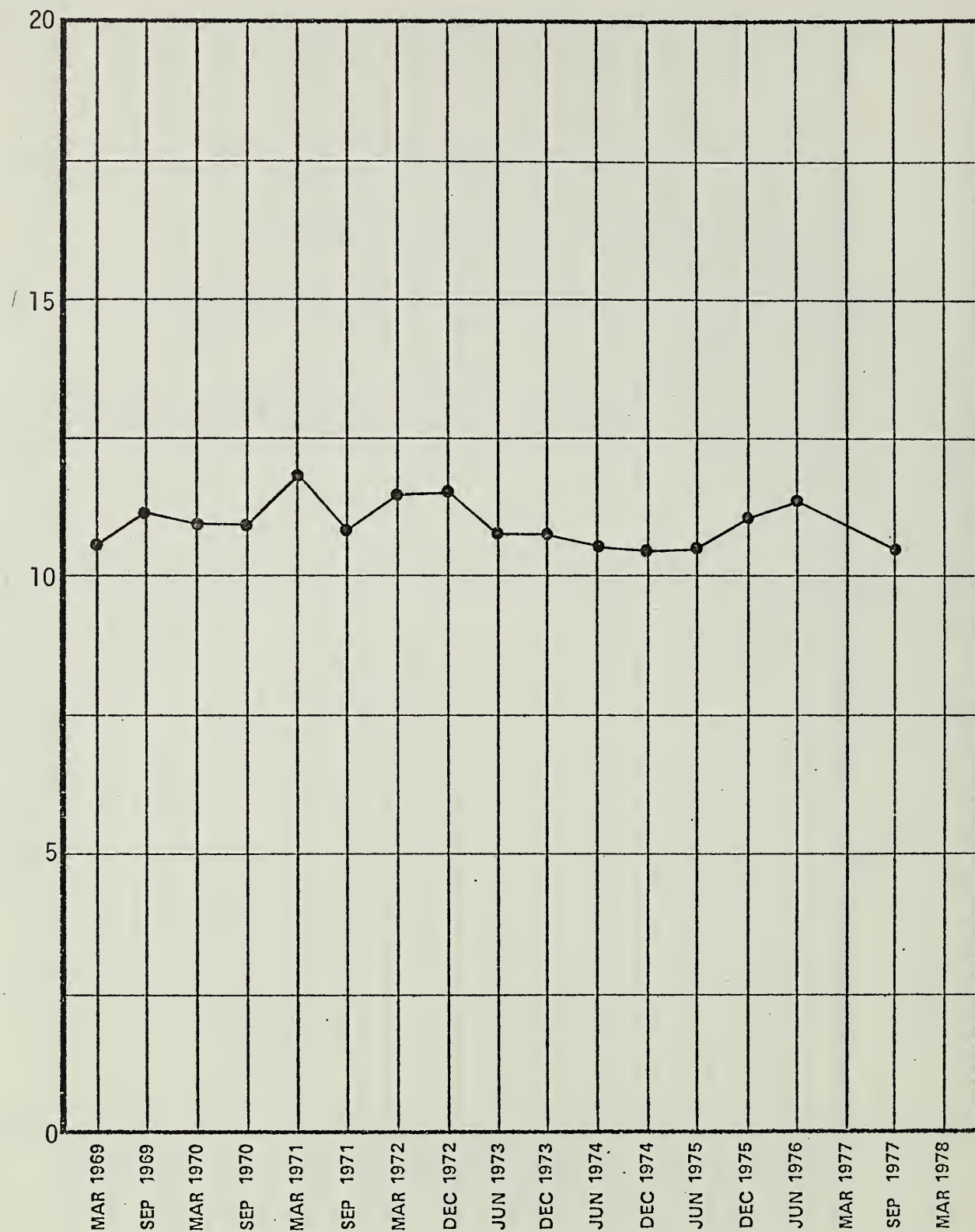


Figure 71: Percentage of Spanish-surname Aides.

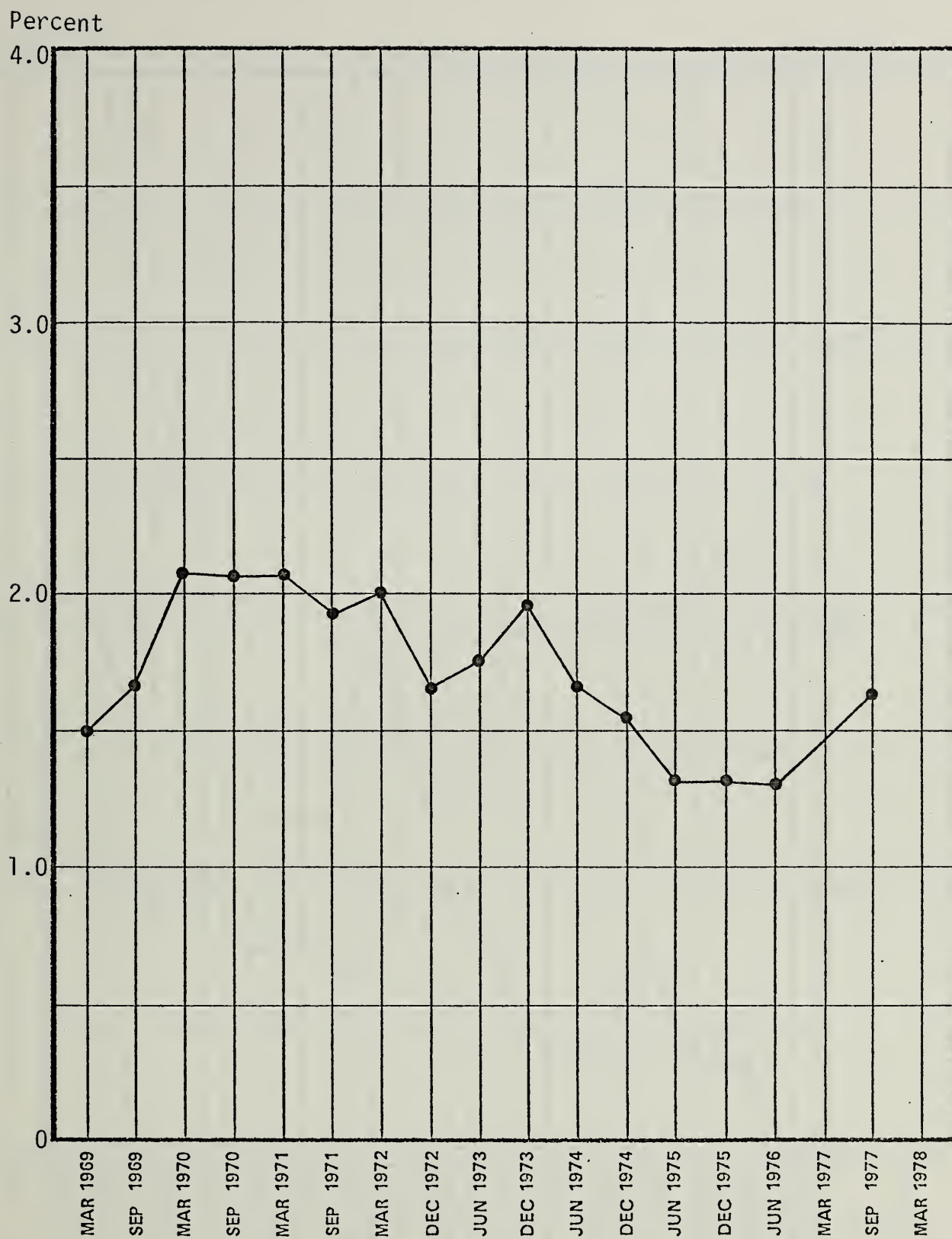


Figure 72: Percentage of American Indian Aides.

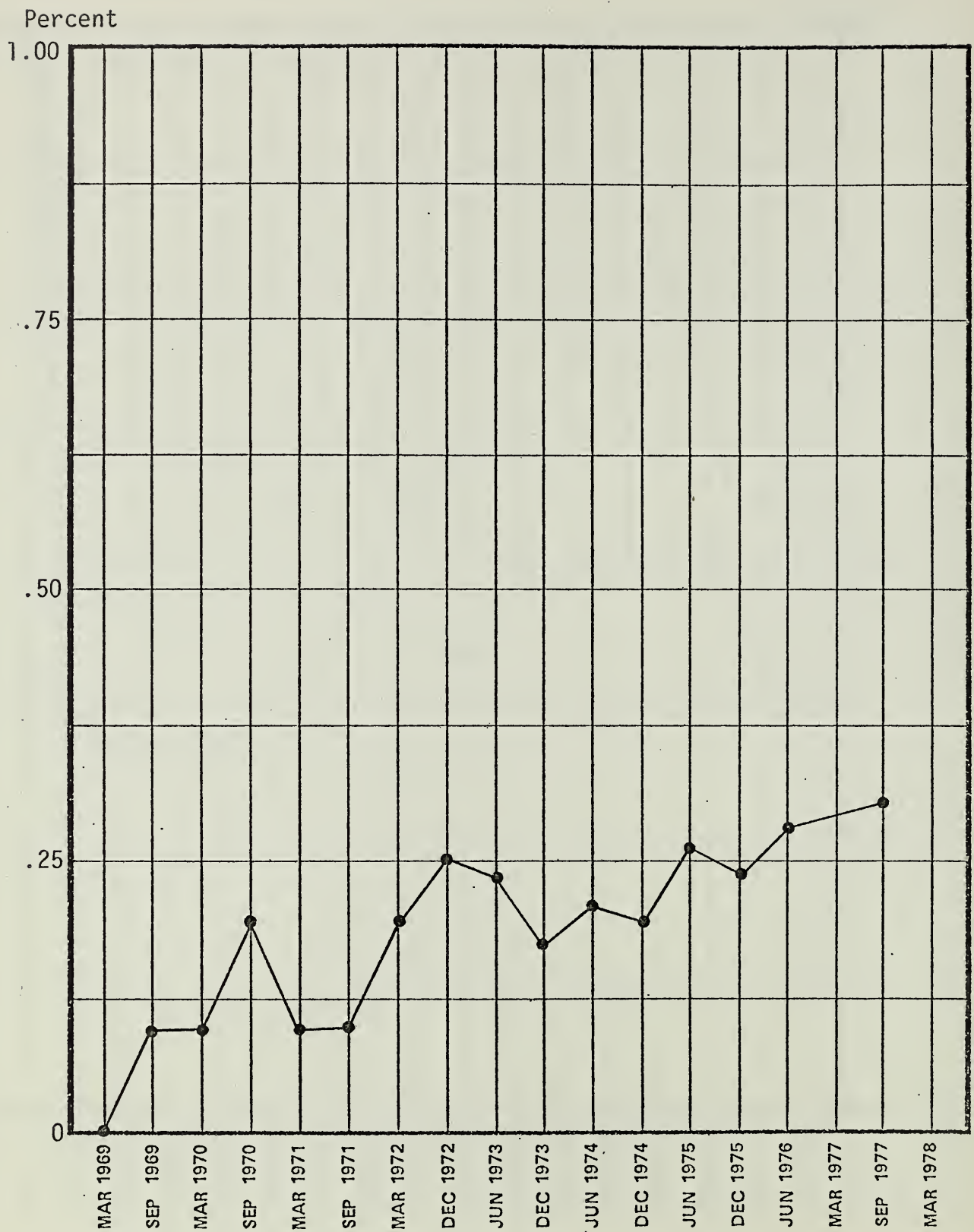


Figure 73: Percentage of Oriental Aides.

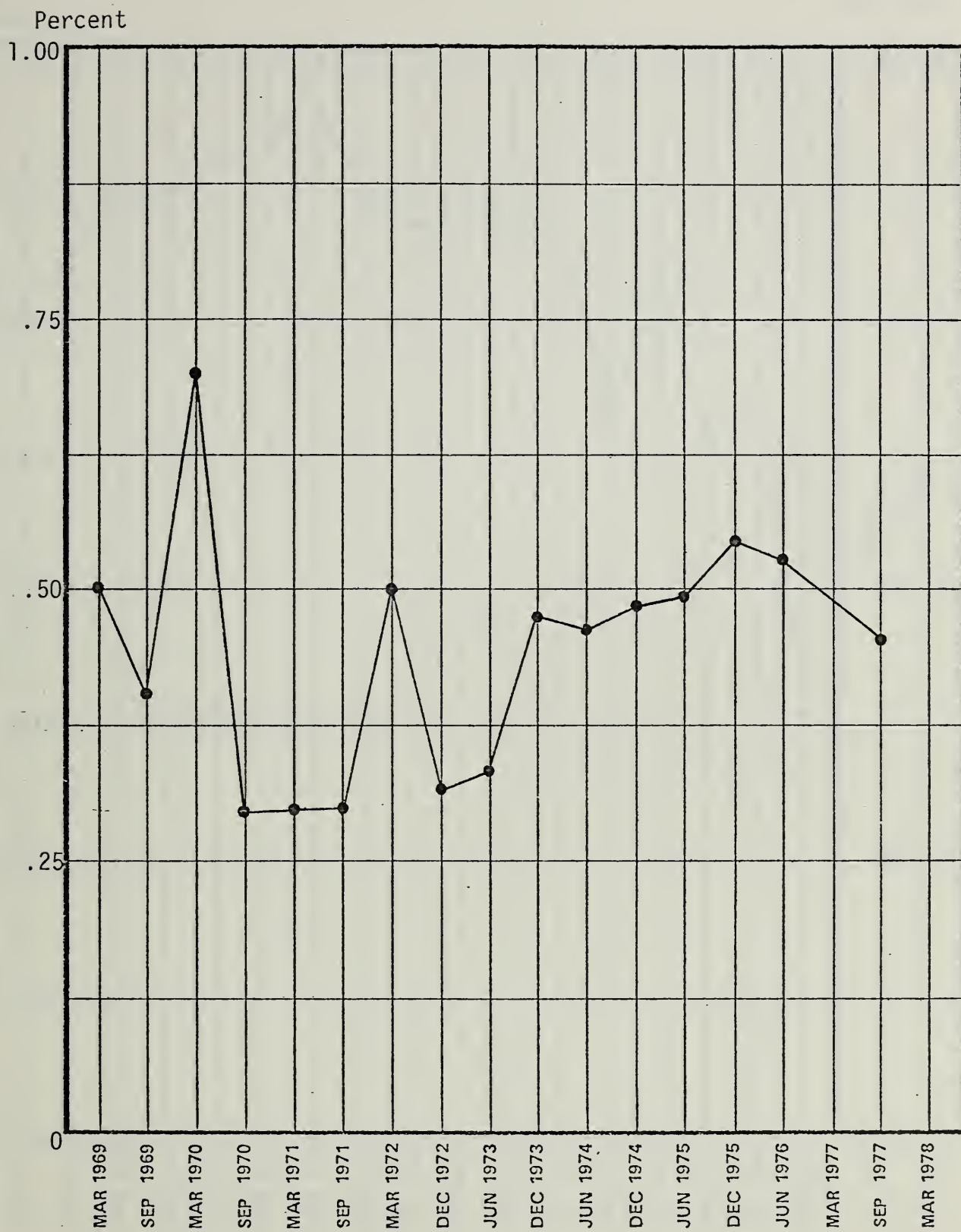


Figure 74: Percentage of "Other" Aides.

Families

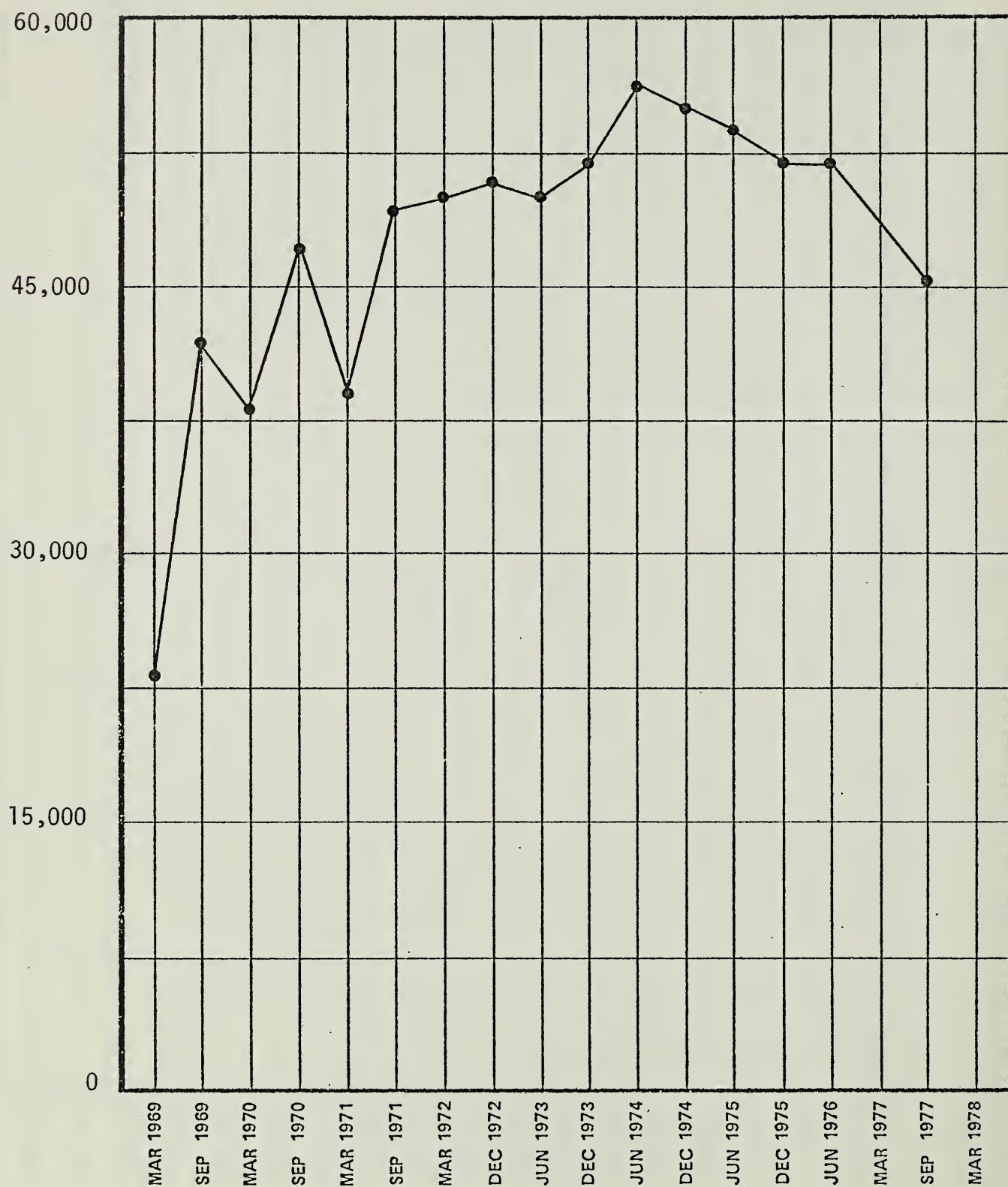


Figure 75: Program Families Per FTE Aide

Percent

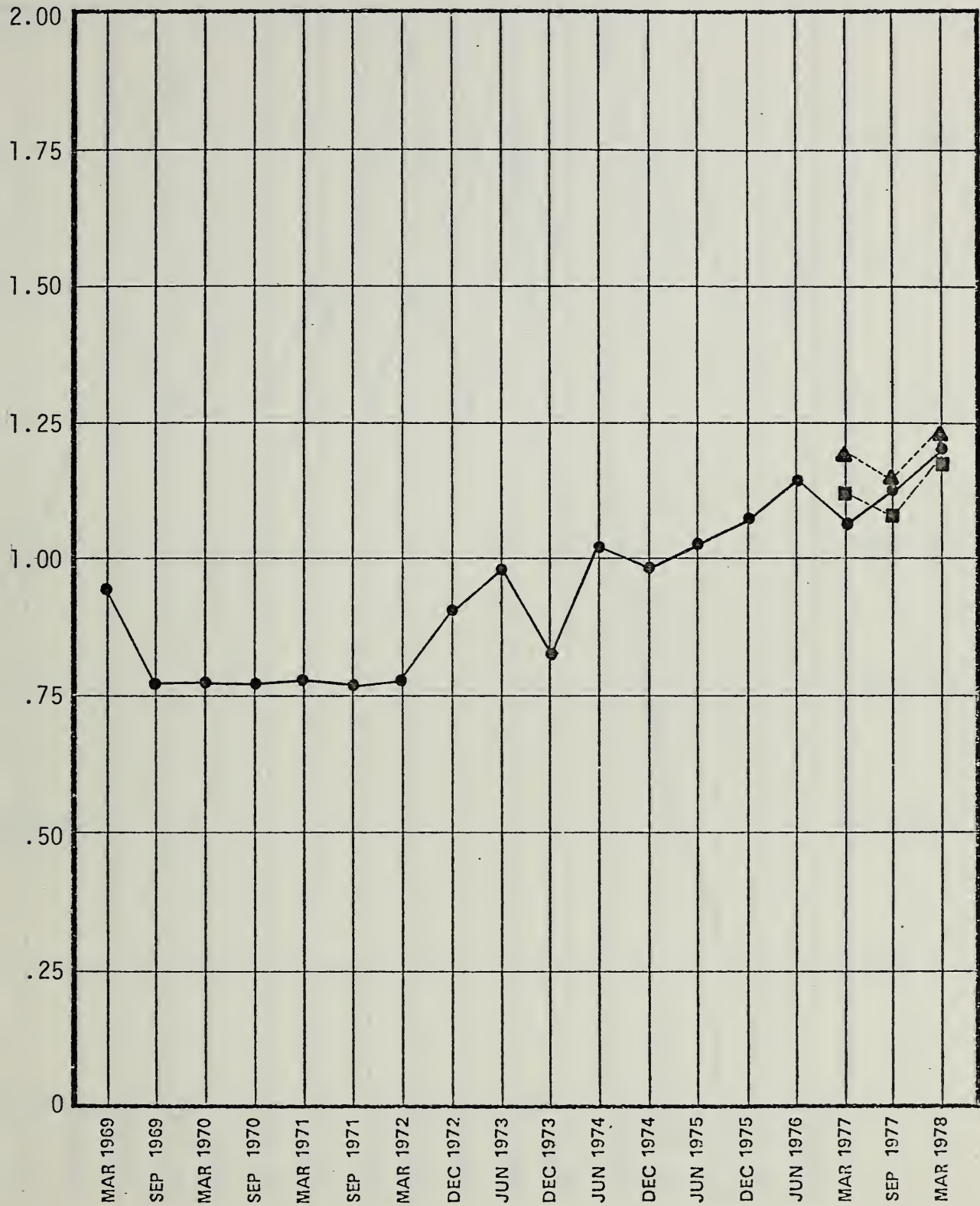


Figure 76: Aide Visits Per Program Family.

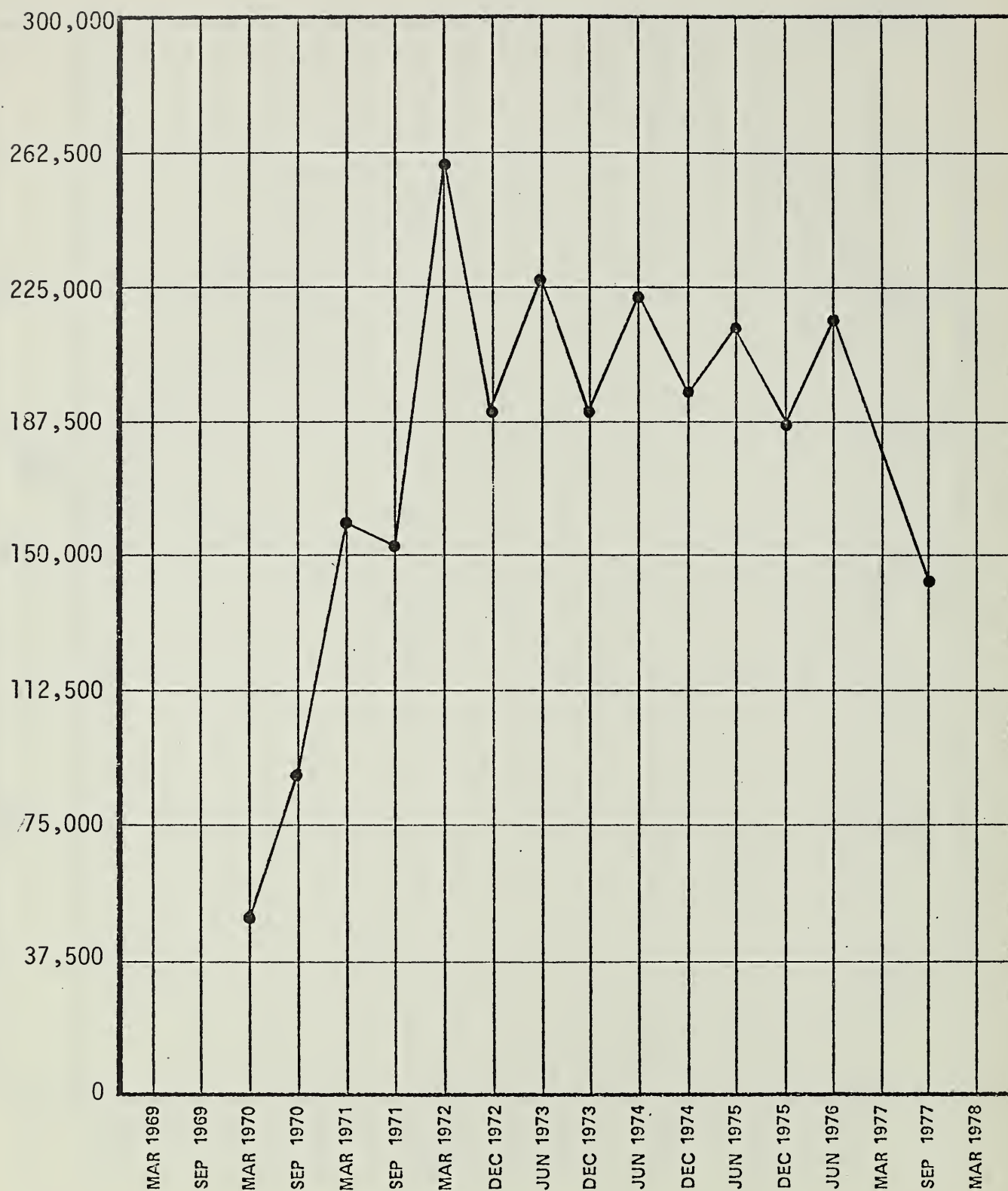


Figure 77: Total Youth Enrolled at End of Reporting Period

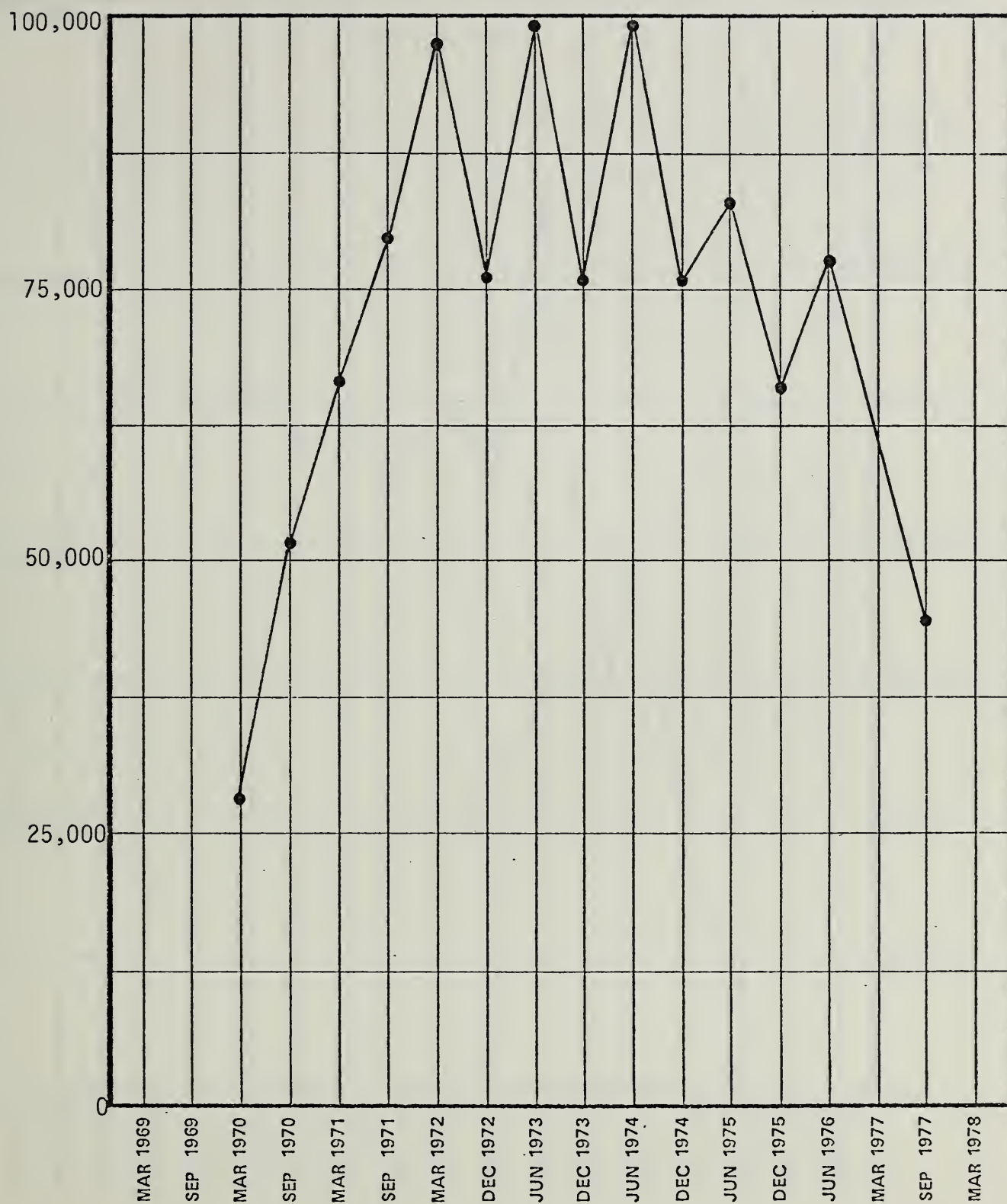


Figure 78: Youth From Program Families Enrolled at End of Reporting Period

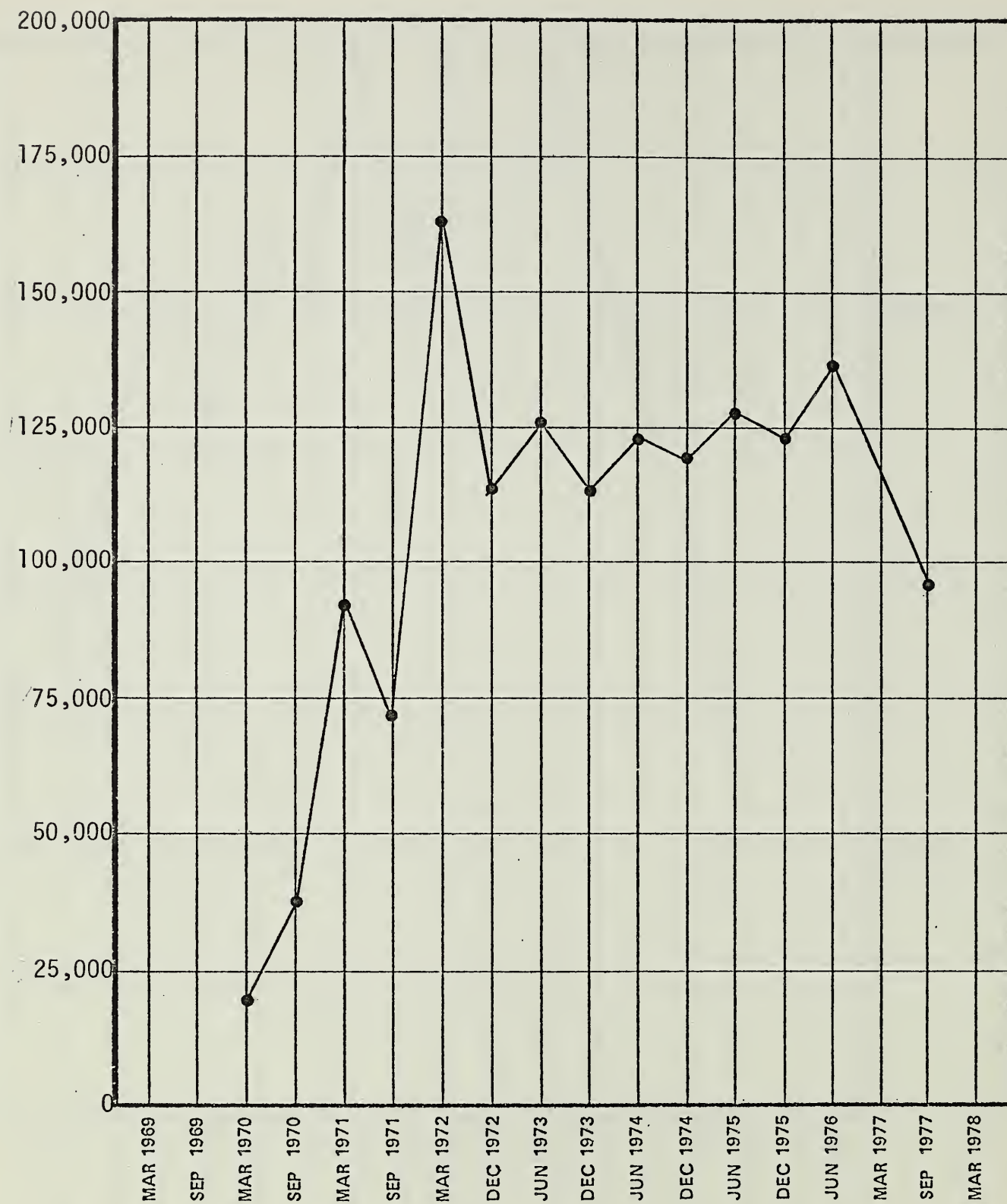


Figure 79: Youth from Non-Program Families at End of Reporting Period

Youth
4,000,000

3,000,000

2,000,000

1,000,000

0

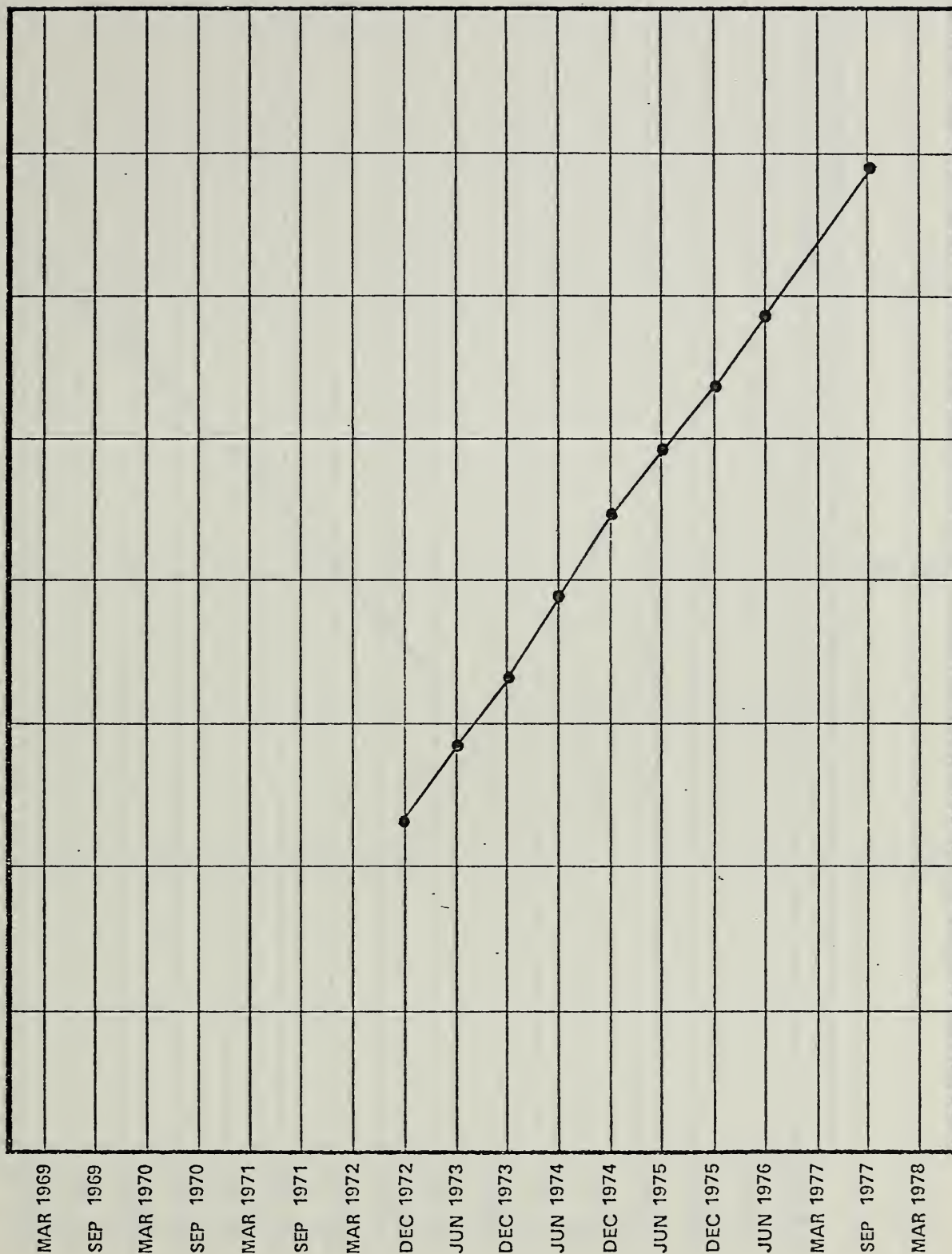


Figure 80: Cumulative Total Youth

Youth

1,000,000

750,000

500,000

250,000

0

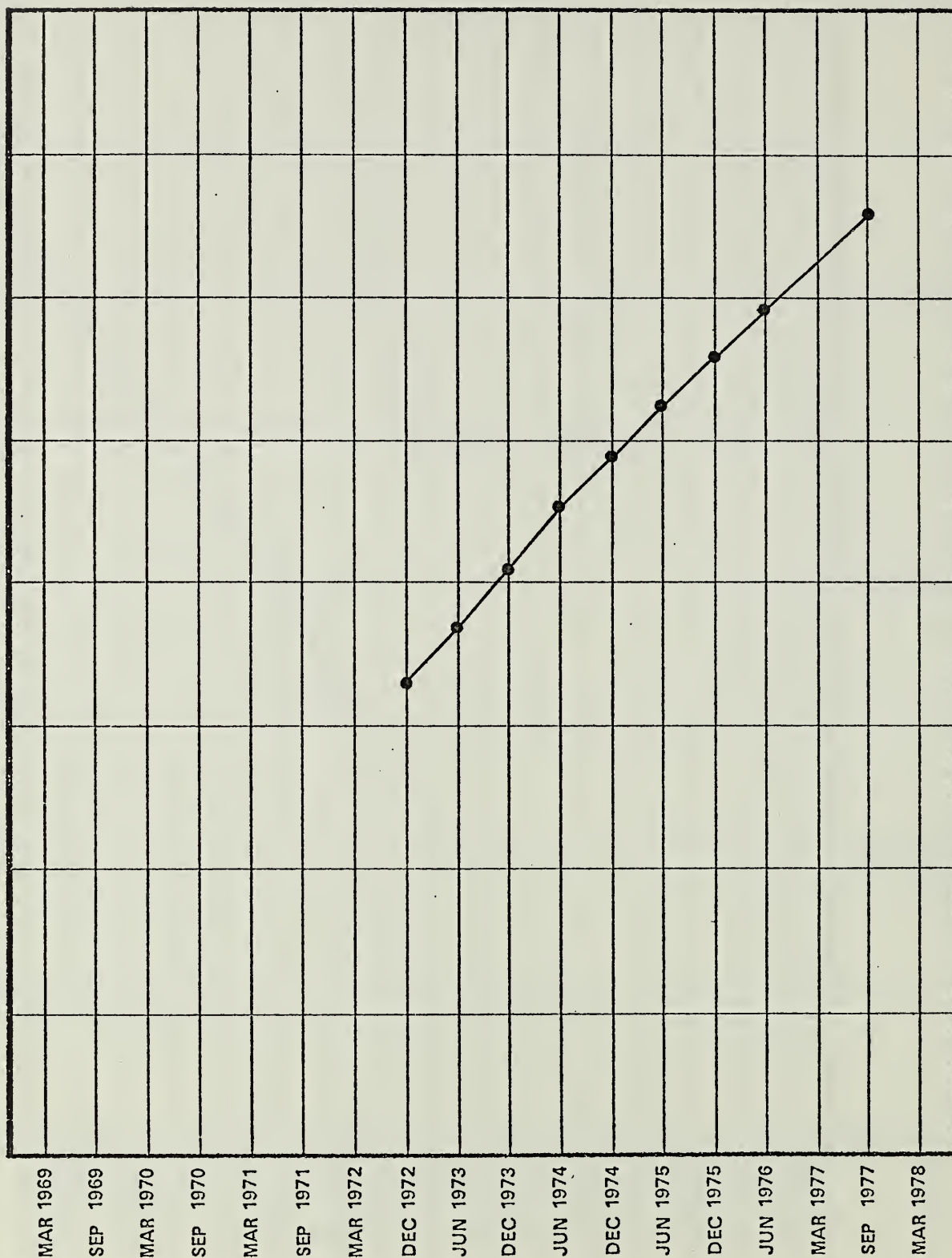


Figure 81: Cumulative Youth from Program Families

Youth

3,000,000

2,250,000

1,500,000

750,000

0

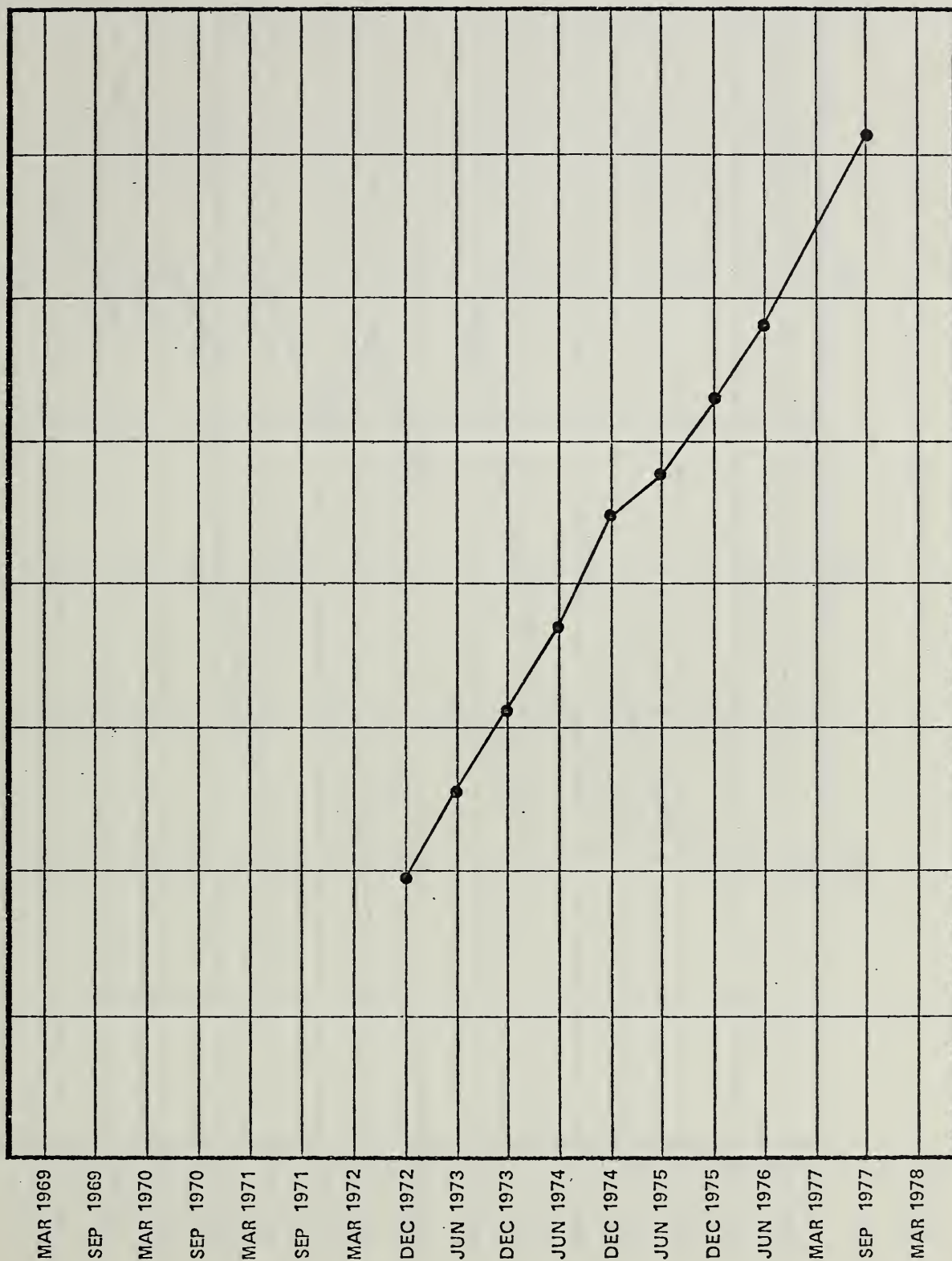


Figure 82: Cumulative Youth from Non-Program Families

Percent

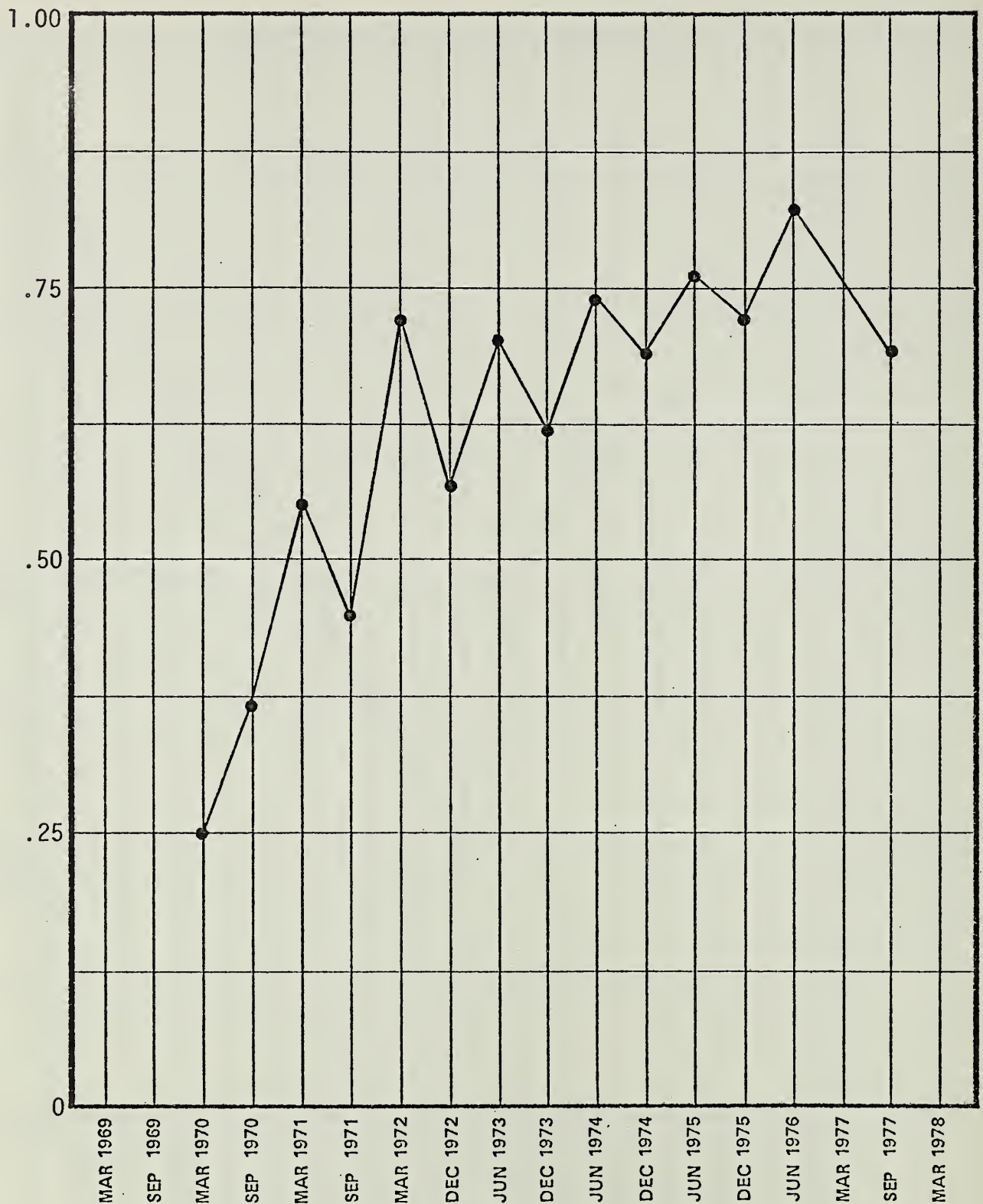


Figure 83: Youth Per Program Family at the End of the Reporting Period

Percent

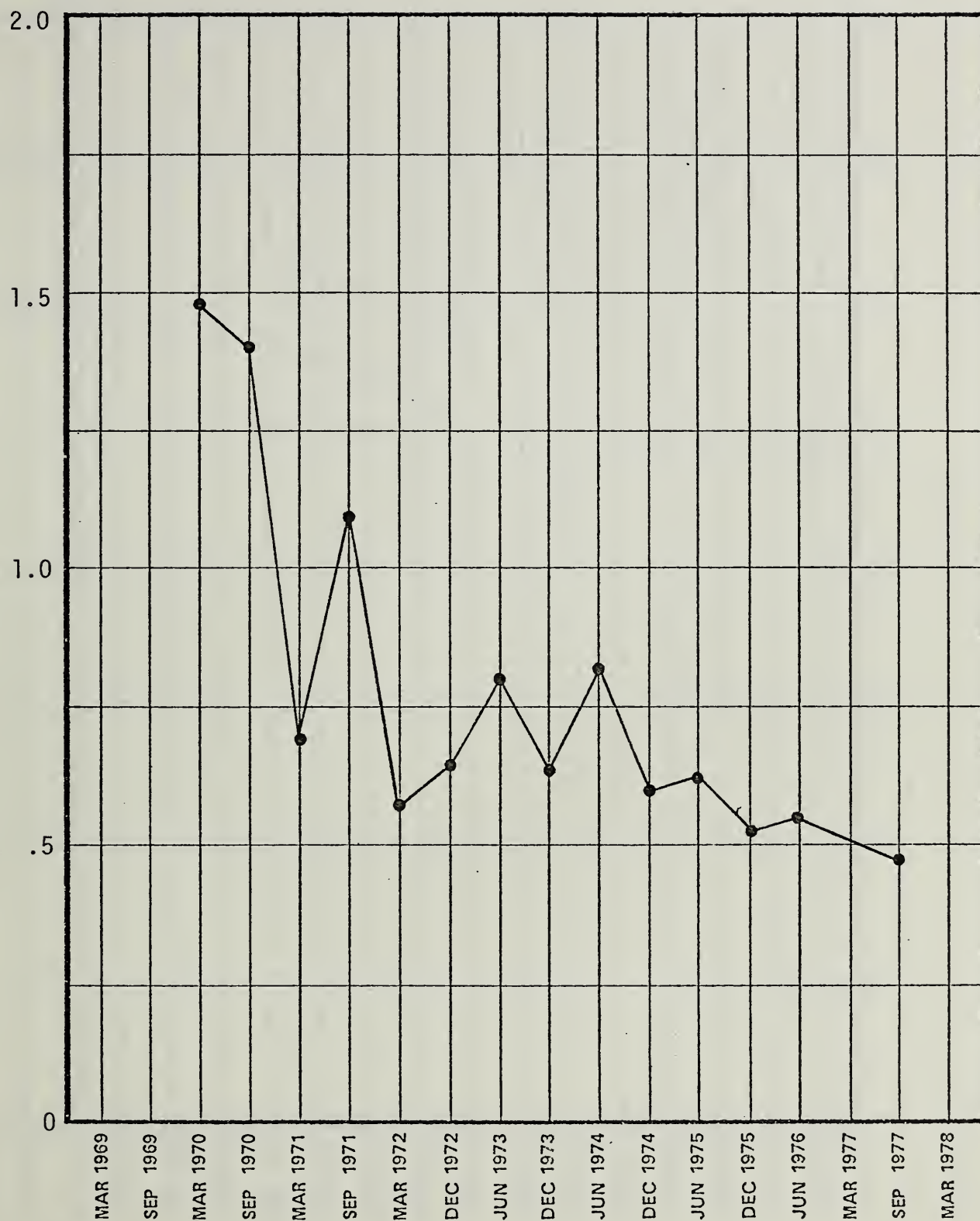


Figure 84: Ratio of Youth From Program Families to Youth from Non-Program Families

Percent

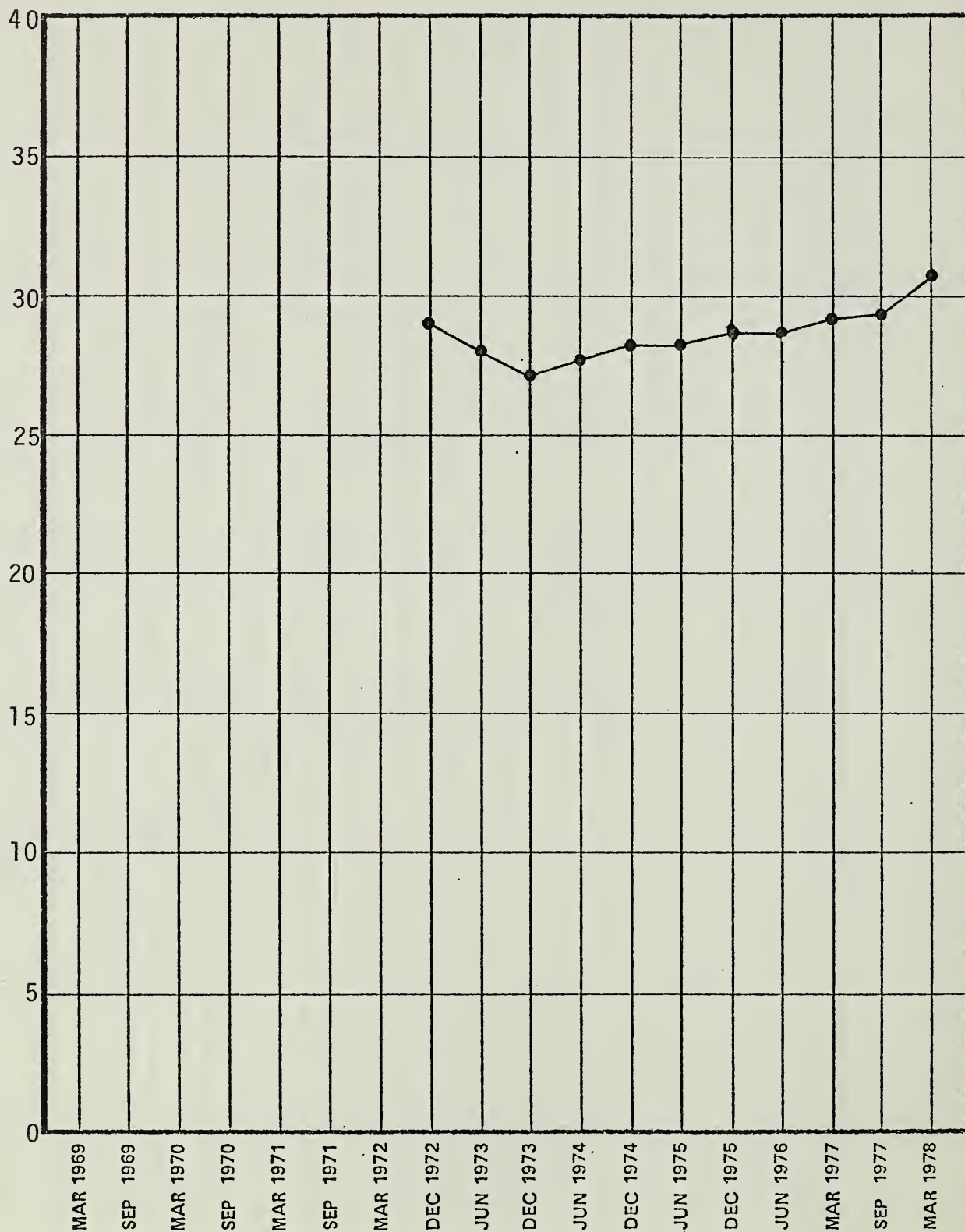


Figure 85: Female Youth Less than 9 Years Old

Percent

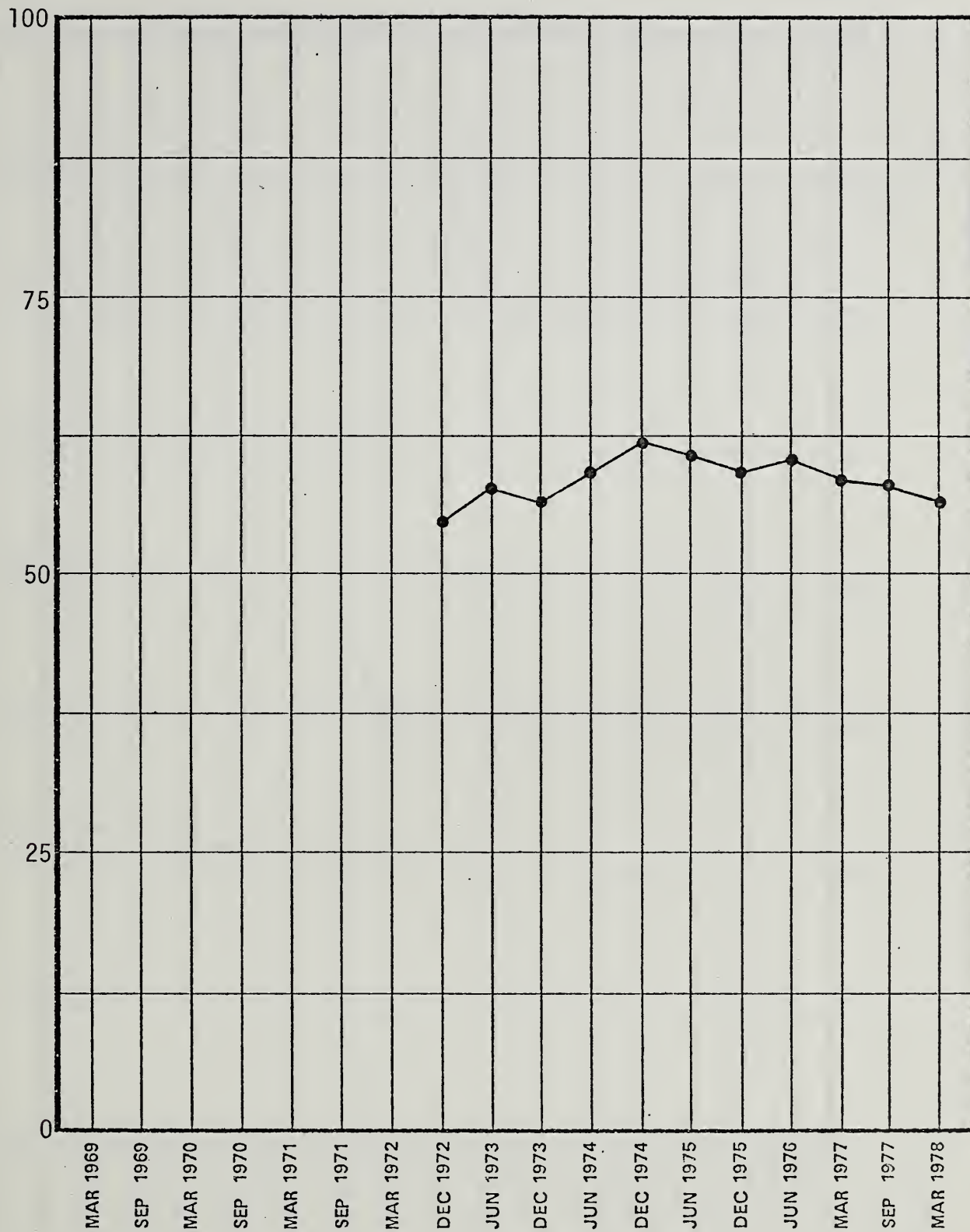


Figure 86: Percentage of Female Youth 9-14 Years Old

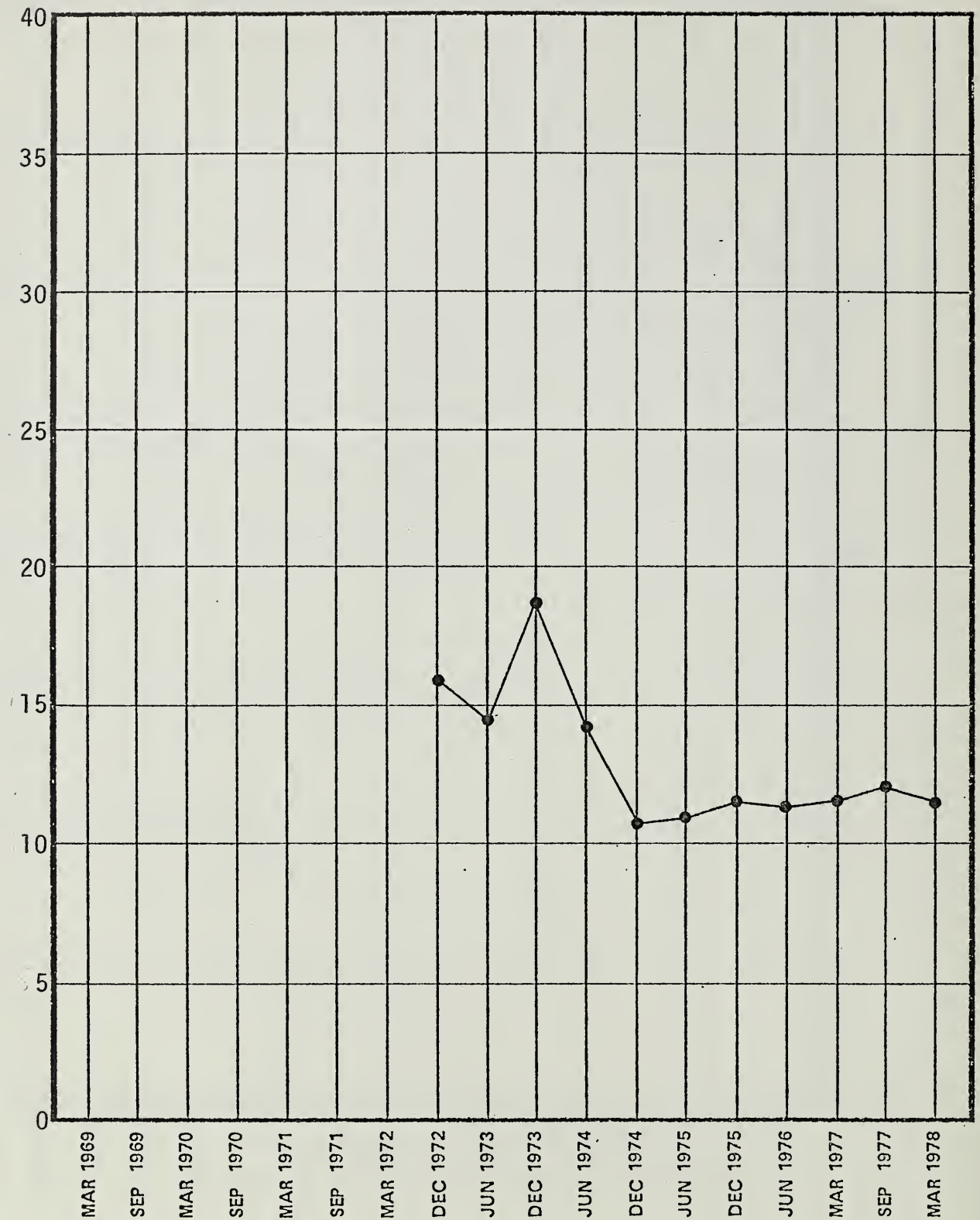


Figure 87: Percentage of Female Youth Older than 14 Years

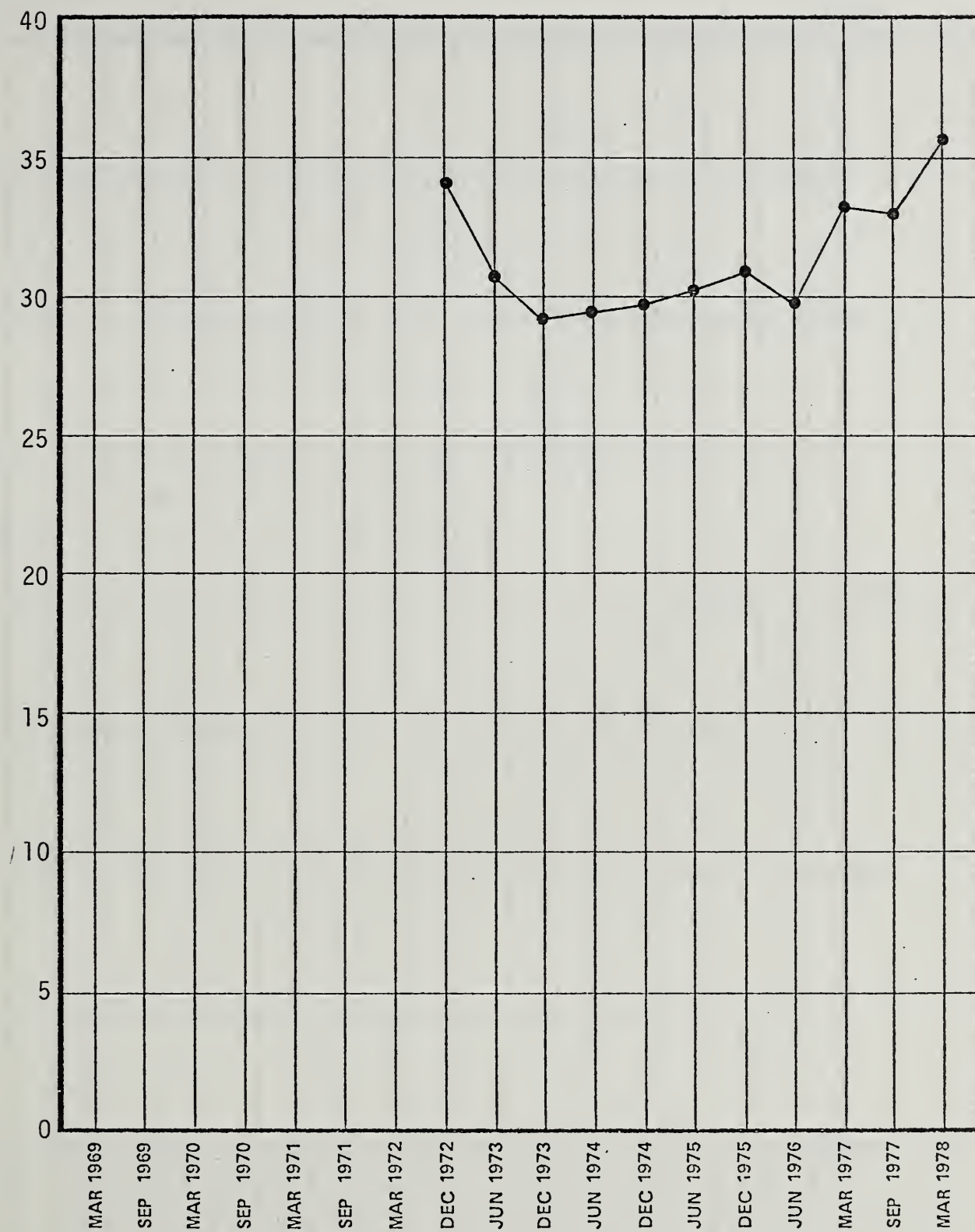


Figure 88: Percentage of Male Youth Less than 9 Years Old

Percent

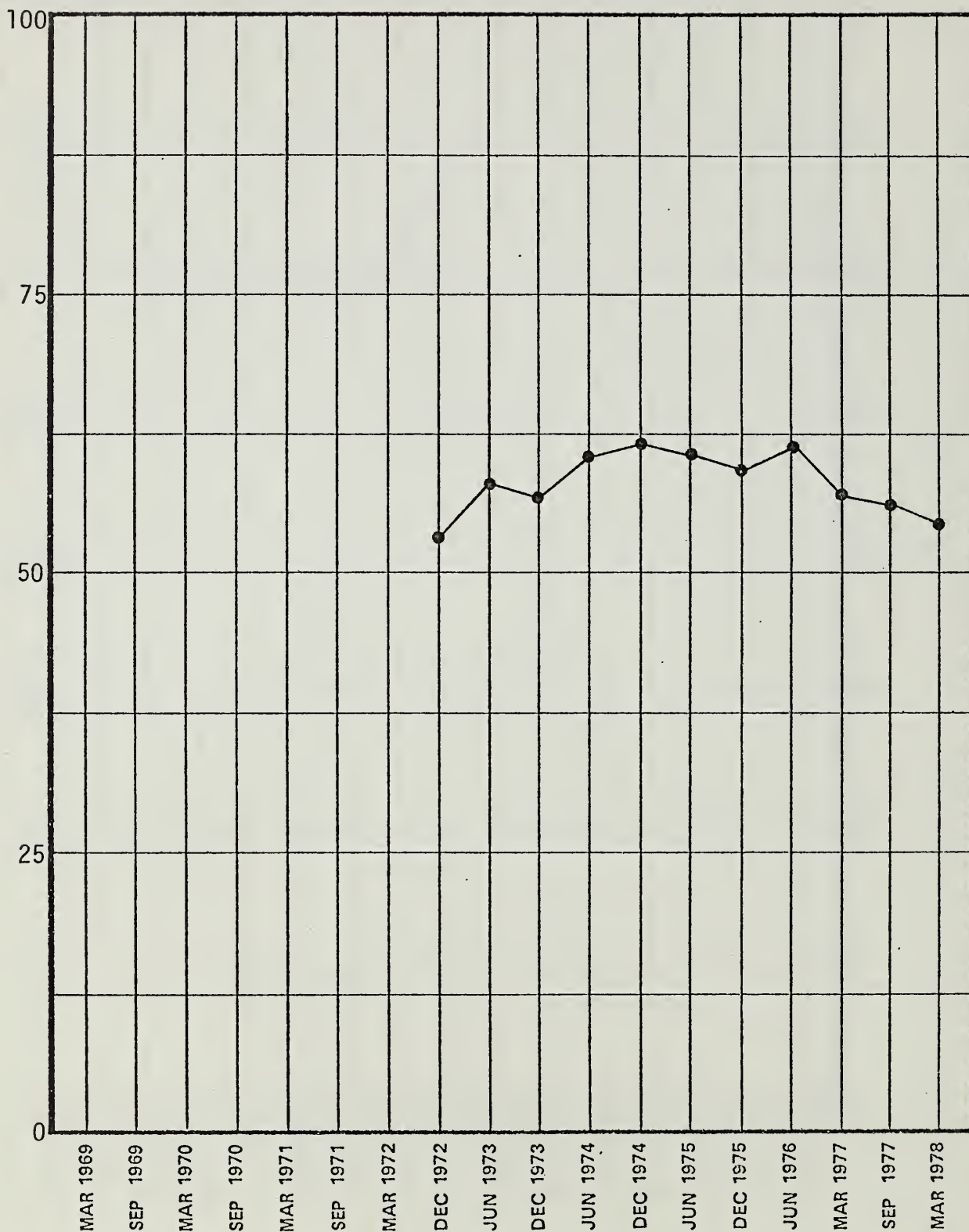


Figure 89: Percentage of Male Youth 9-14 Years Old

Percent

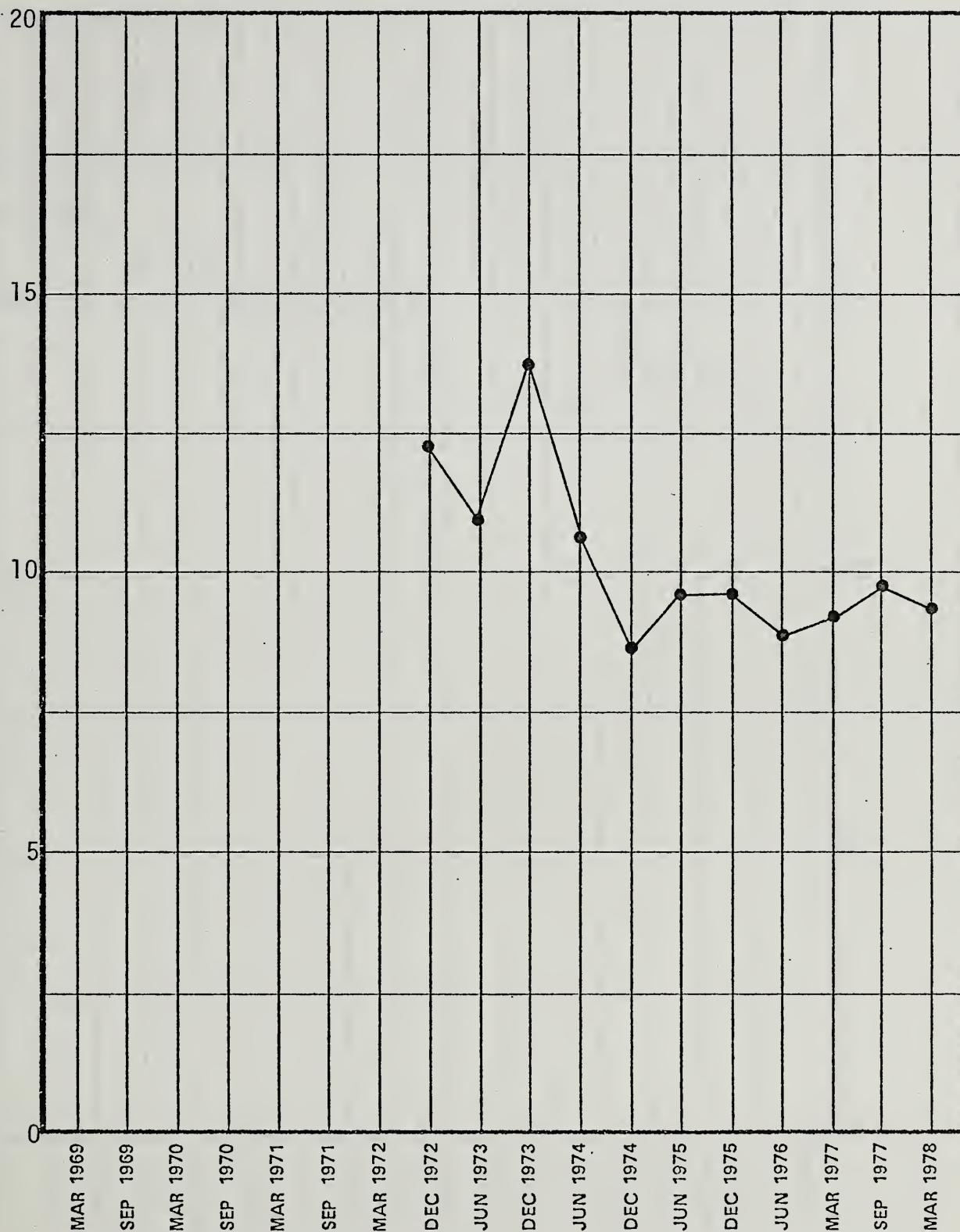


Figure 90: Percentage of Male Youth Older than 14 Years

Percent

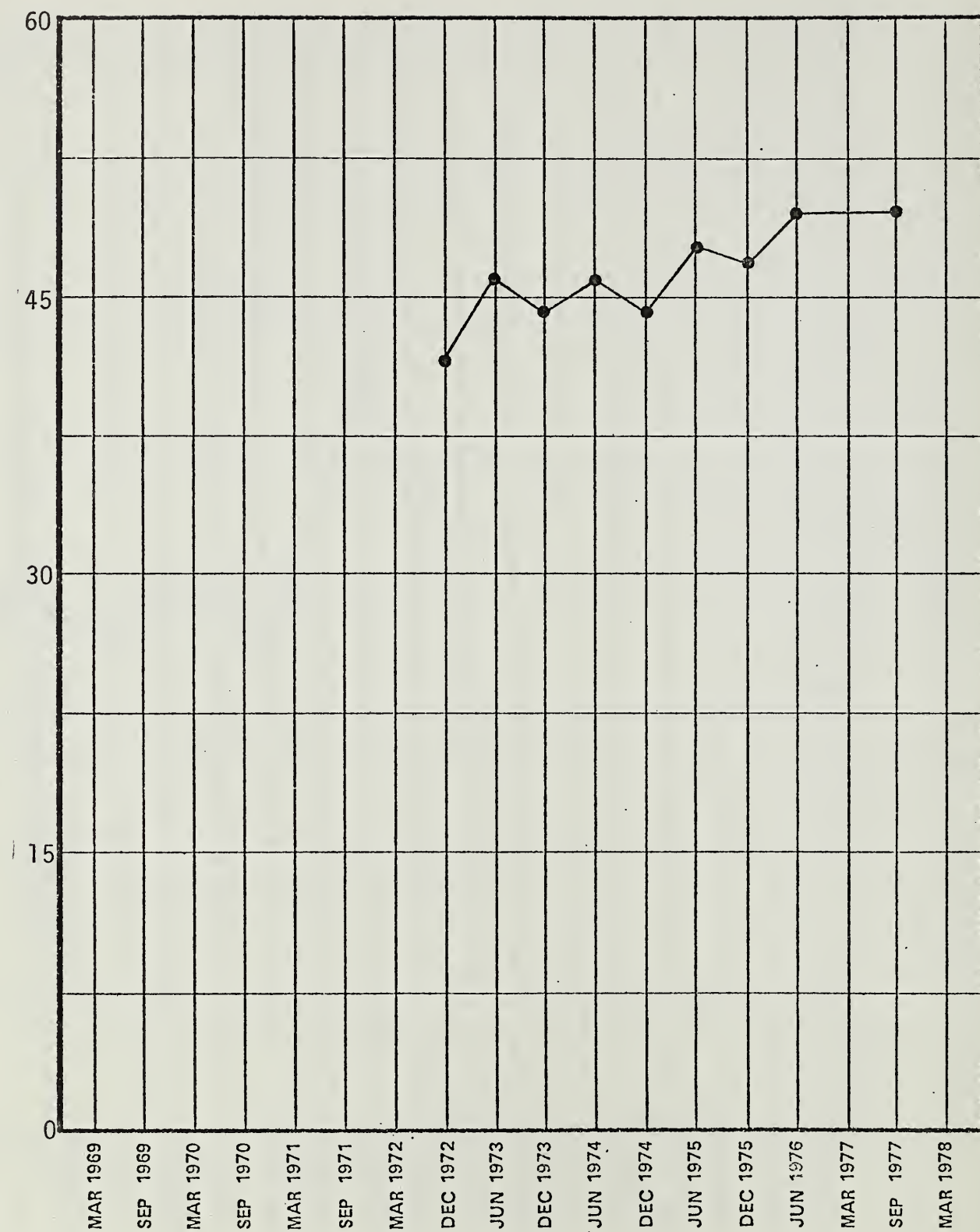


Figure 91: Percentage of White Youth

Percent

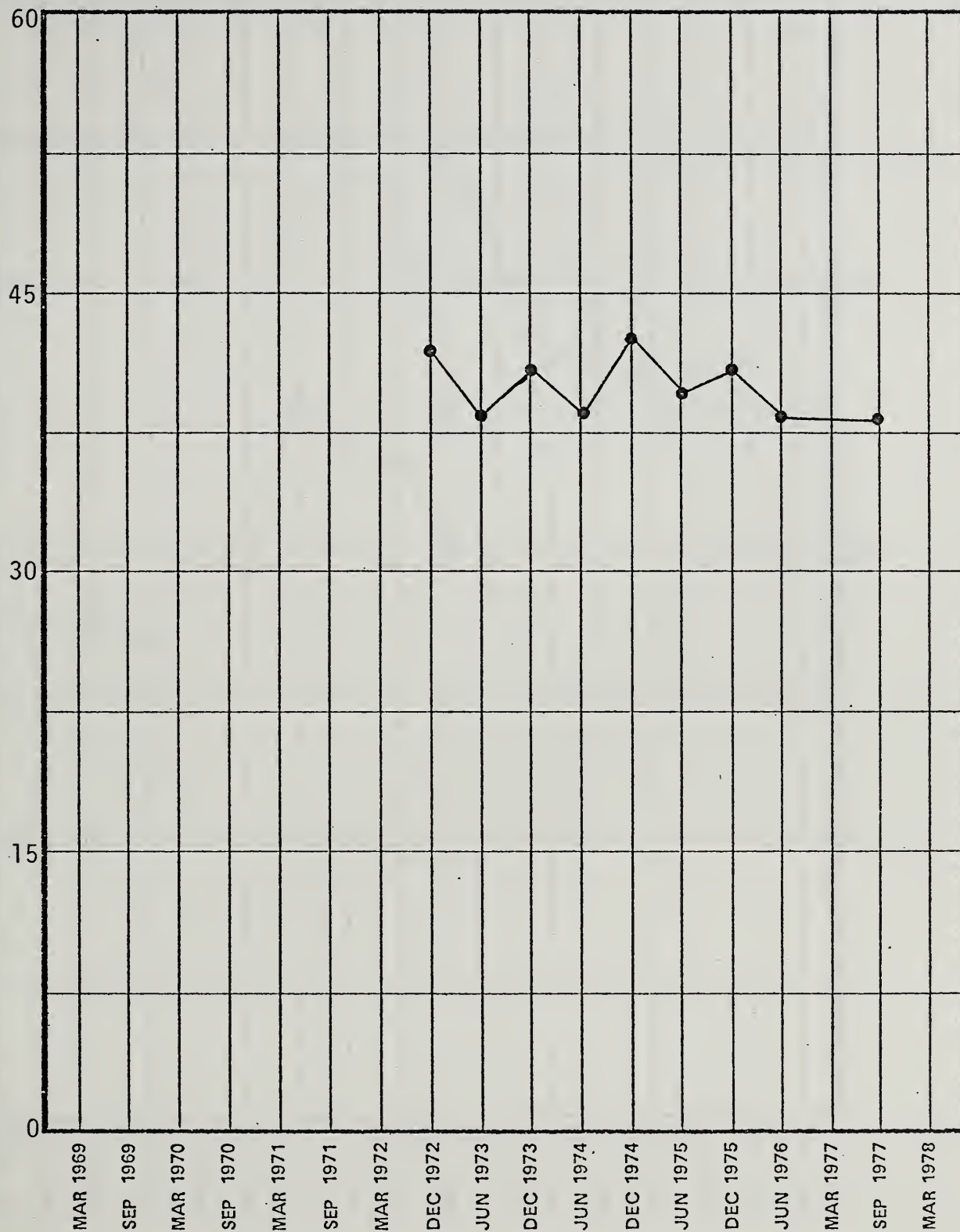


Figure 92: Percentage of Black Youth

Percent

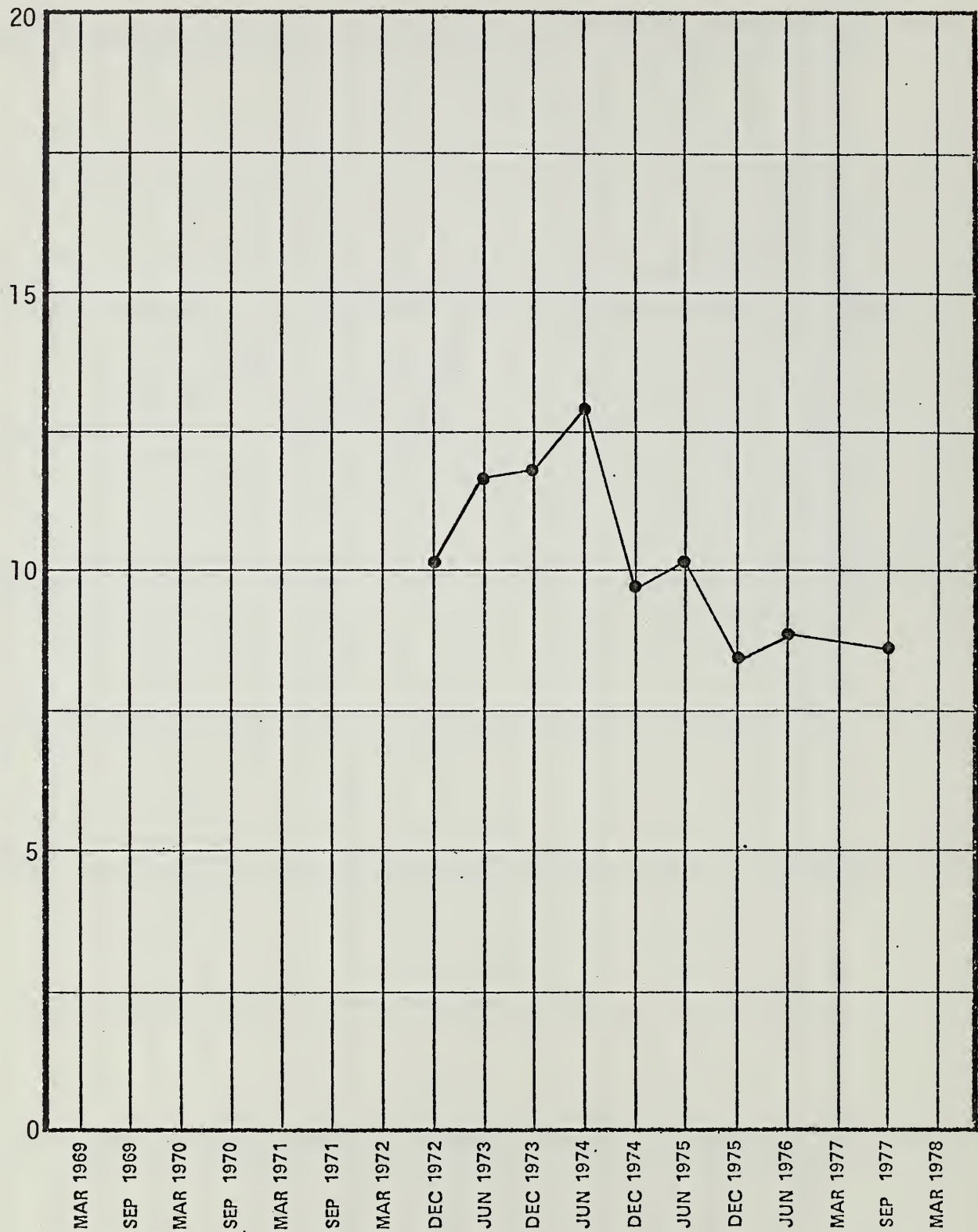


Figure 93: Percentage of Spanish-Surname Youth

Percent

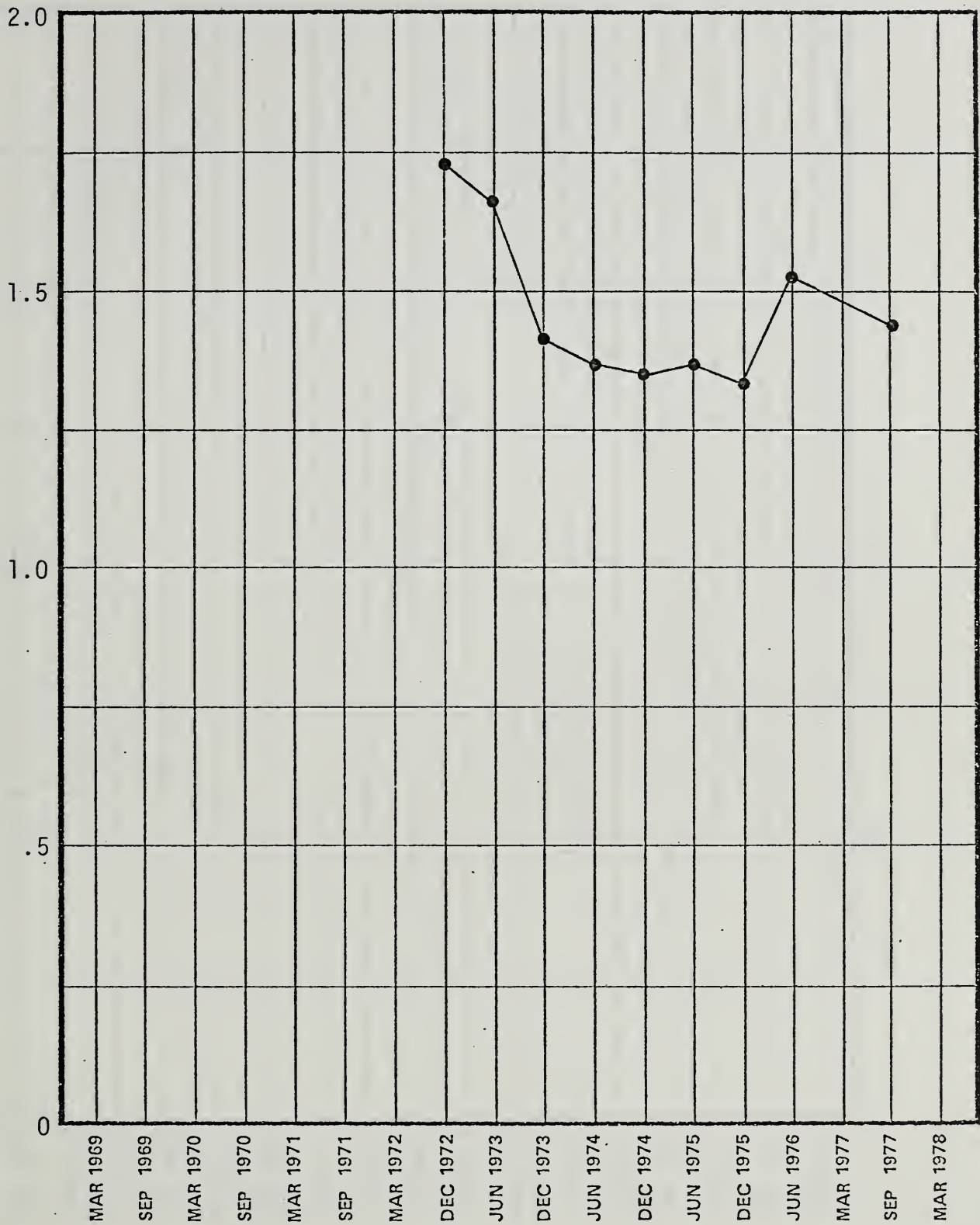


Figure 94: Percentage of American Indian Youth

Percent

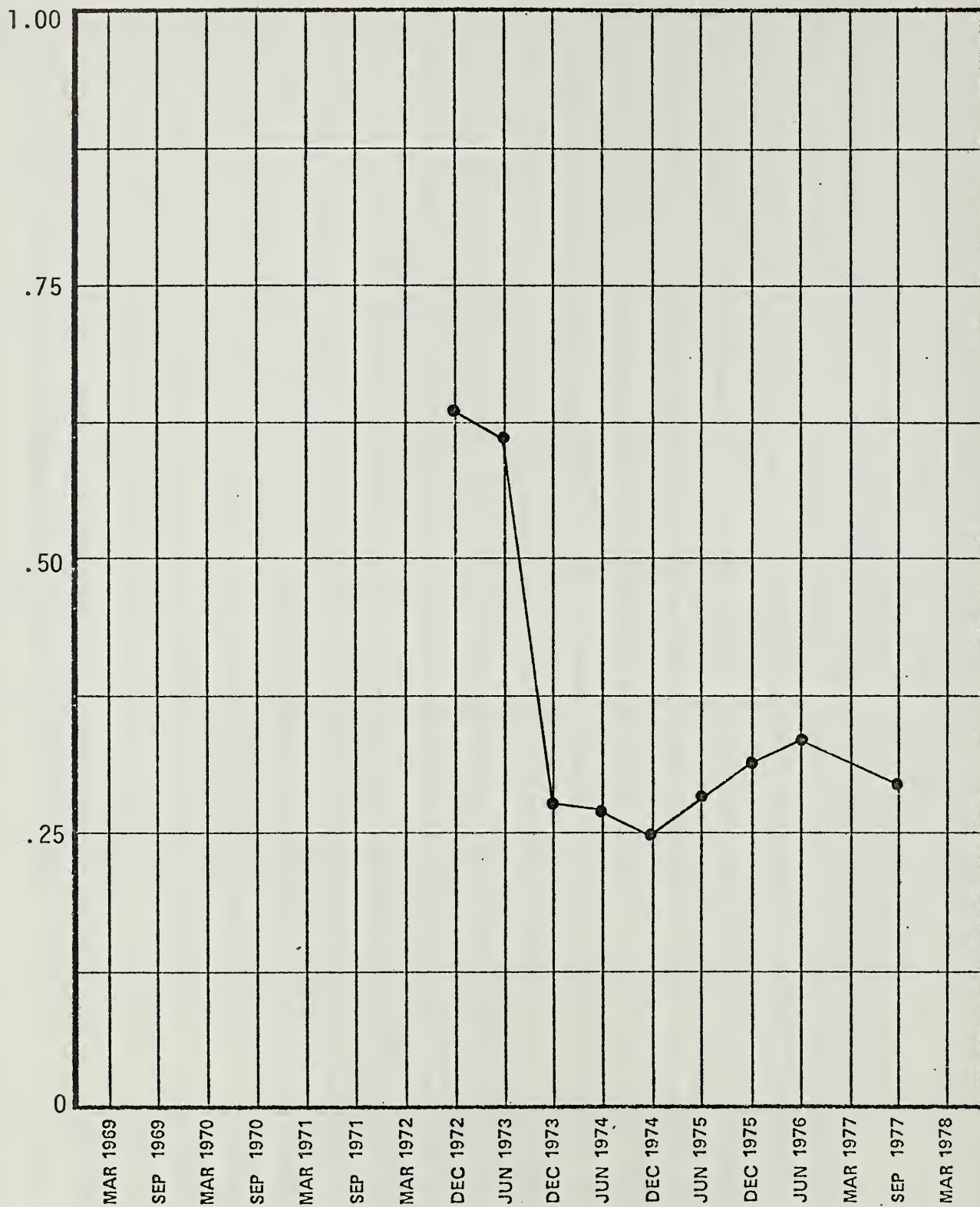


Figure 95: Percentage of Oriental Youth

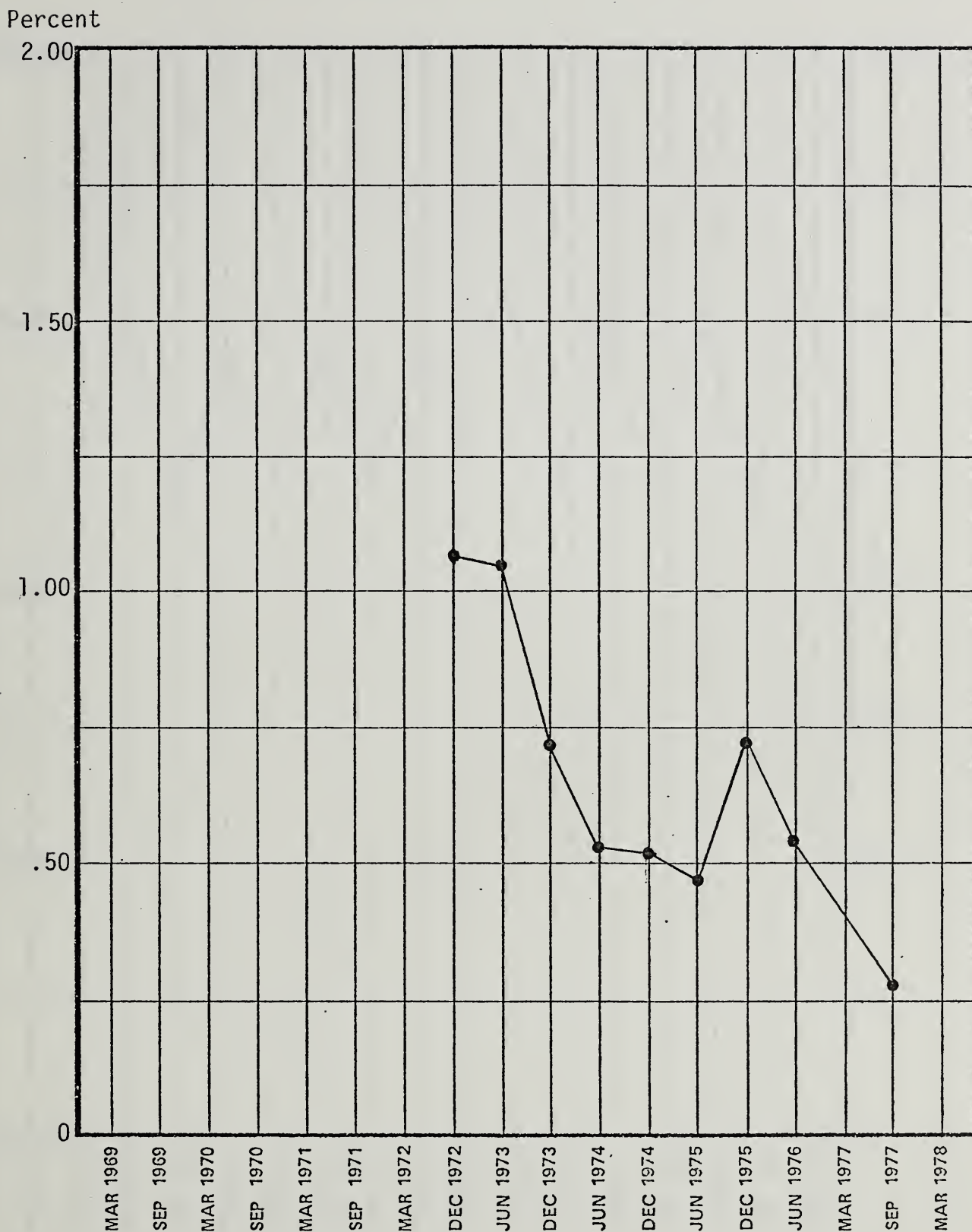


Figure 96: Percentage of "Other" Youth

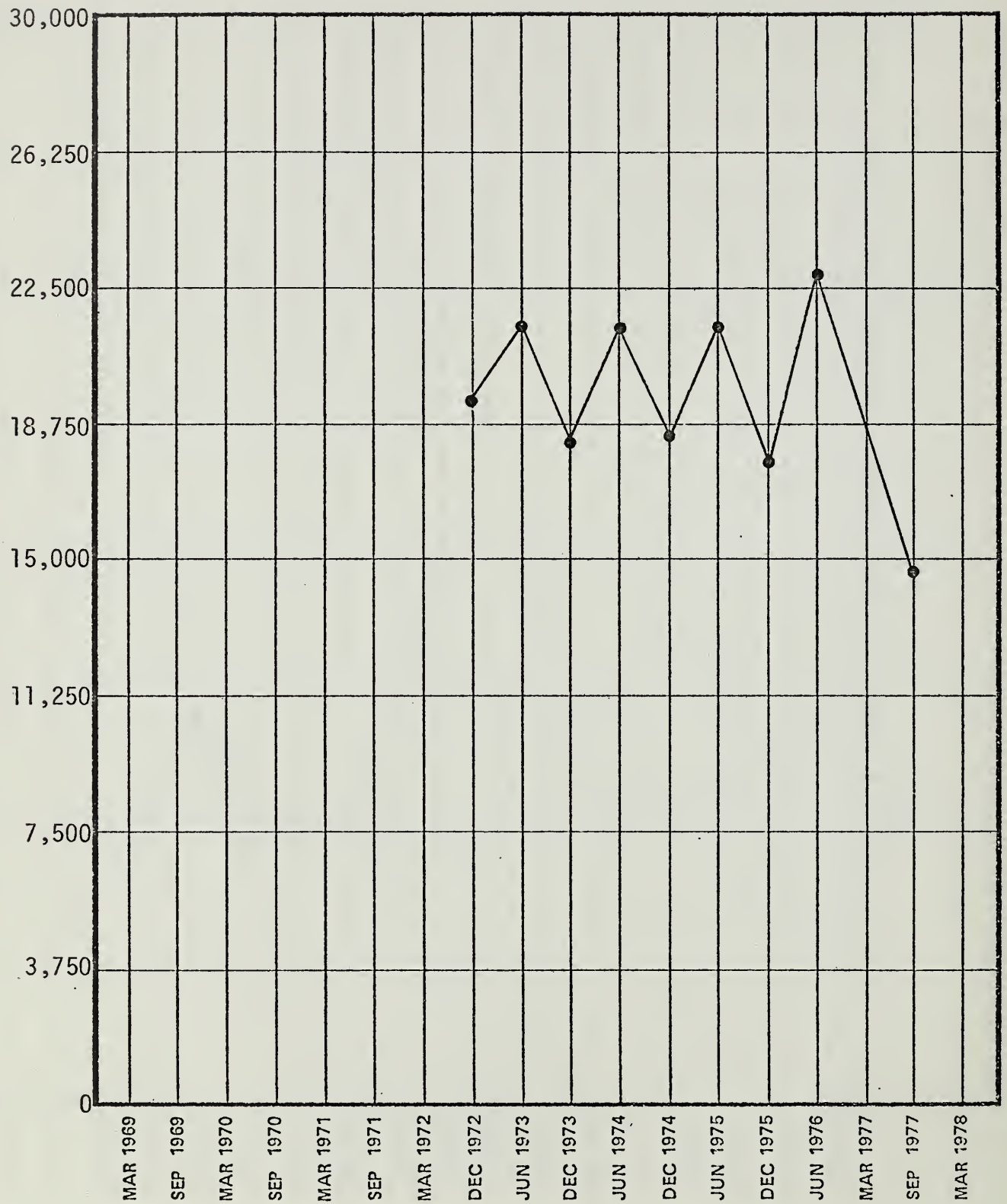


Figure 97: Total Volunteers at End of Reporting Period

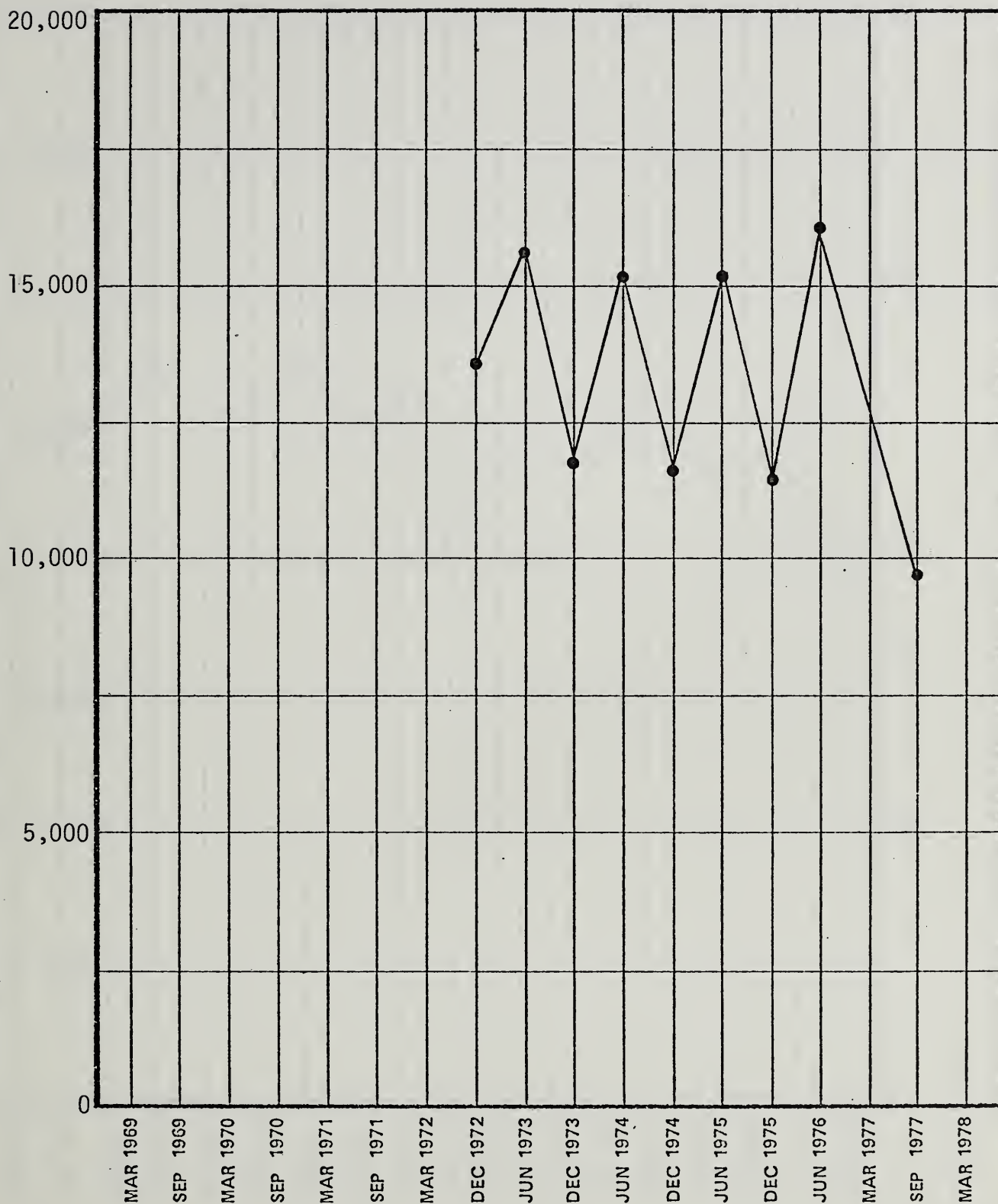


Figure 99: Volunteers Working ONLY with Youth at End of Reporting Period

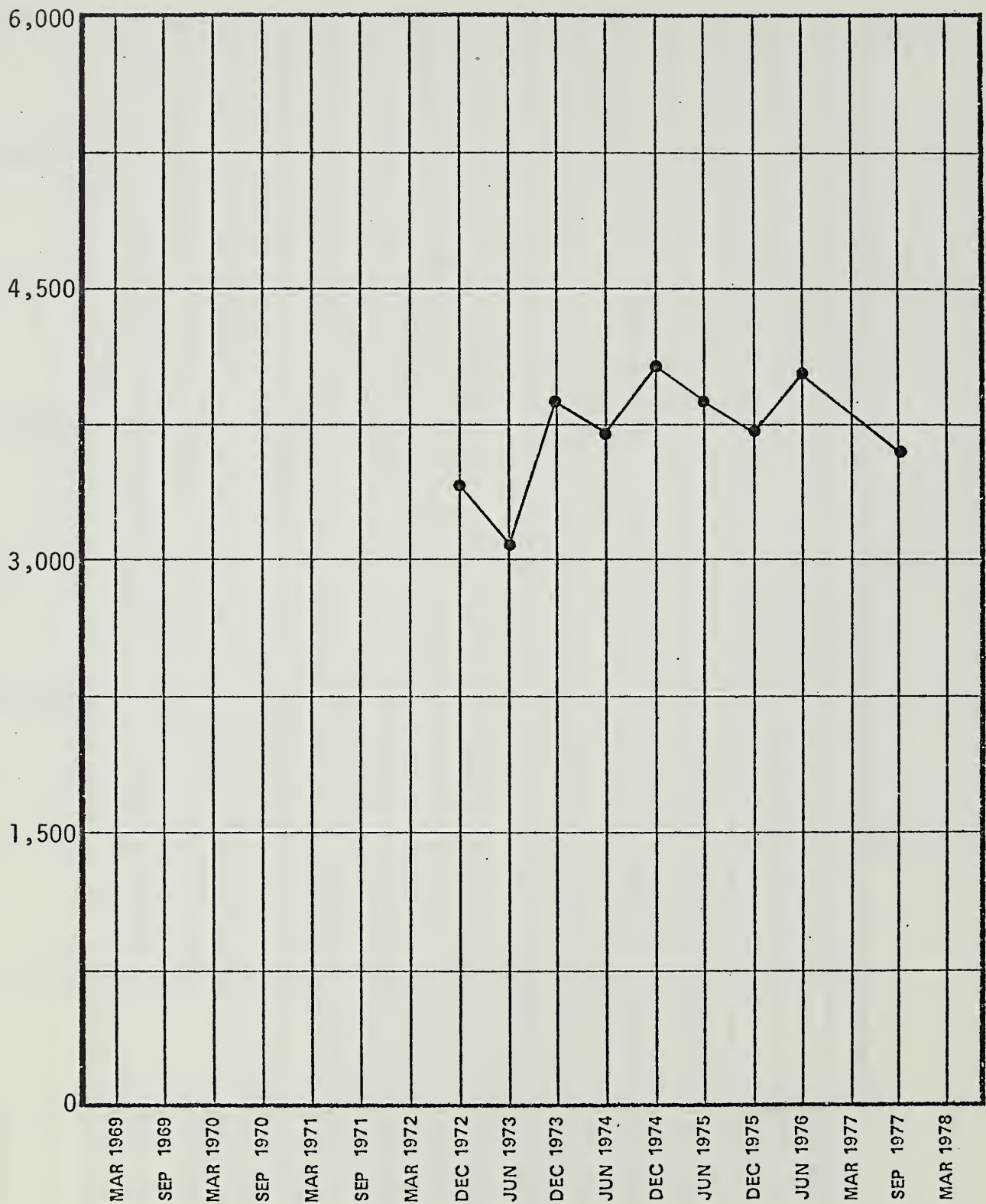


Figure 98: Volunteers Working with Adults at End of Reporting Period

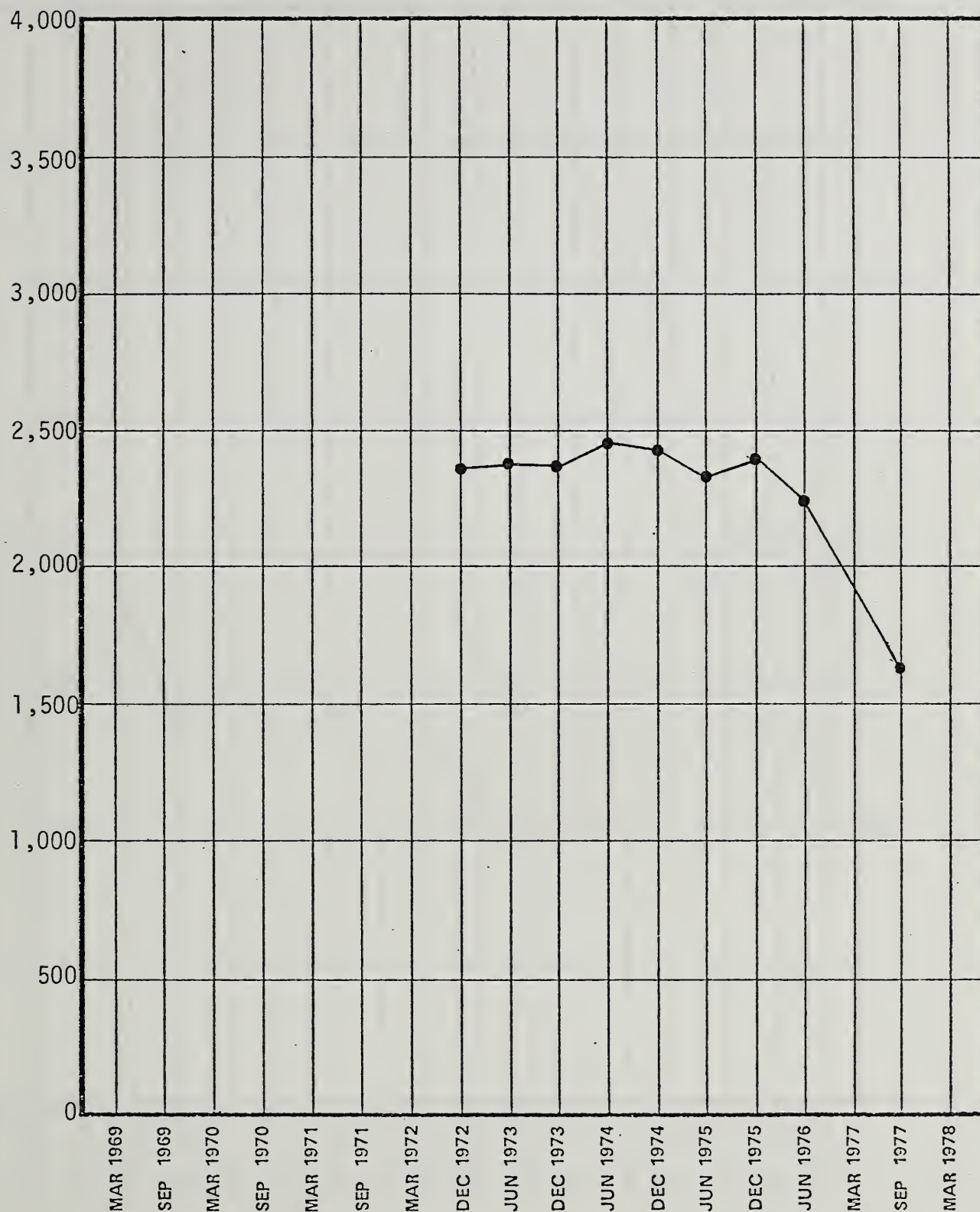


Figure 100: Volunteers Working with Youth and Adults at End of Reporting Period

Percent

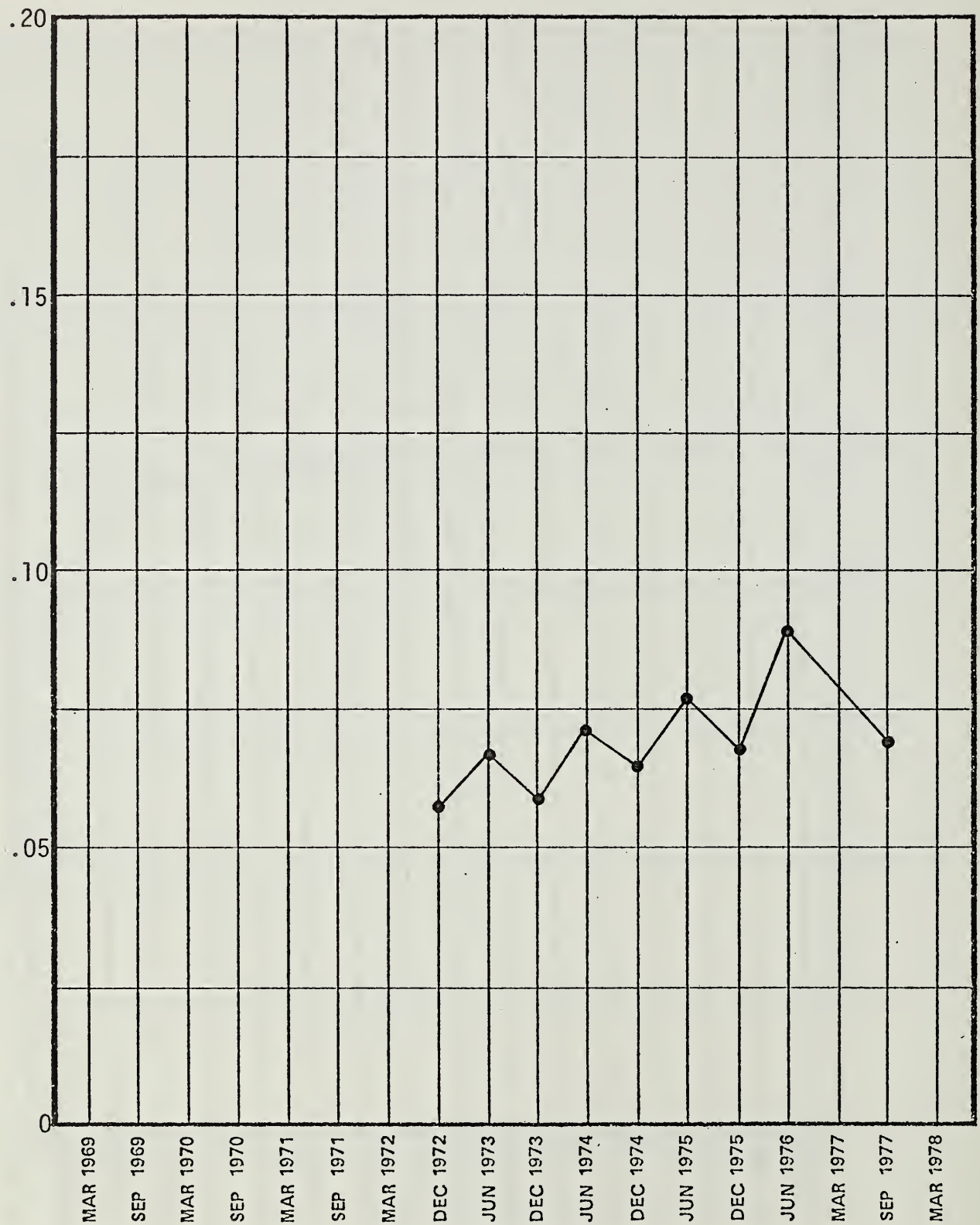


Figure 101: Volunteers Per Program Family

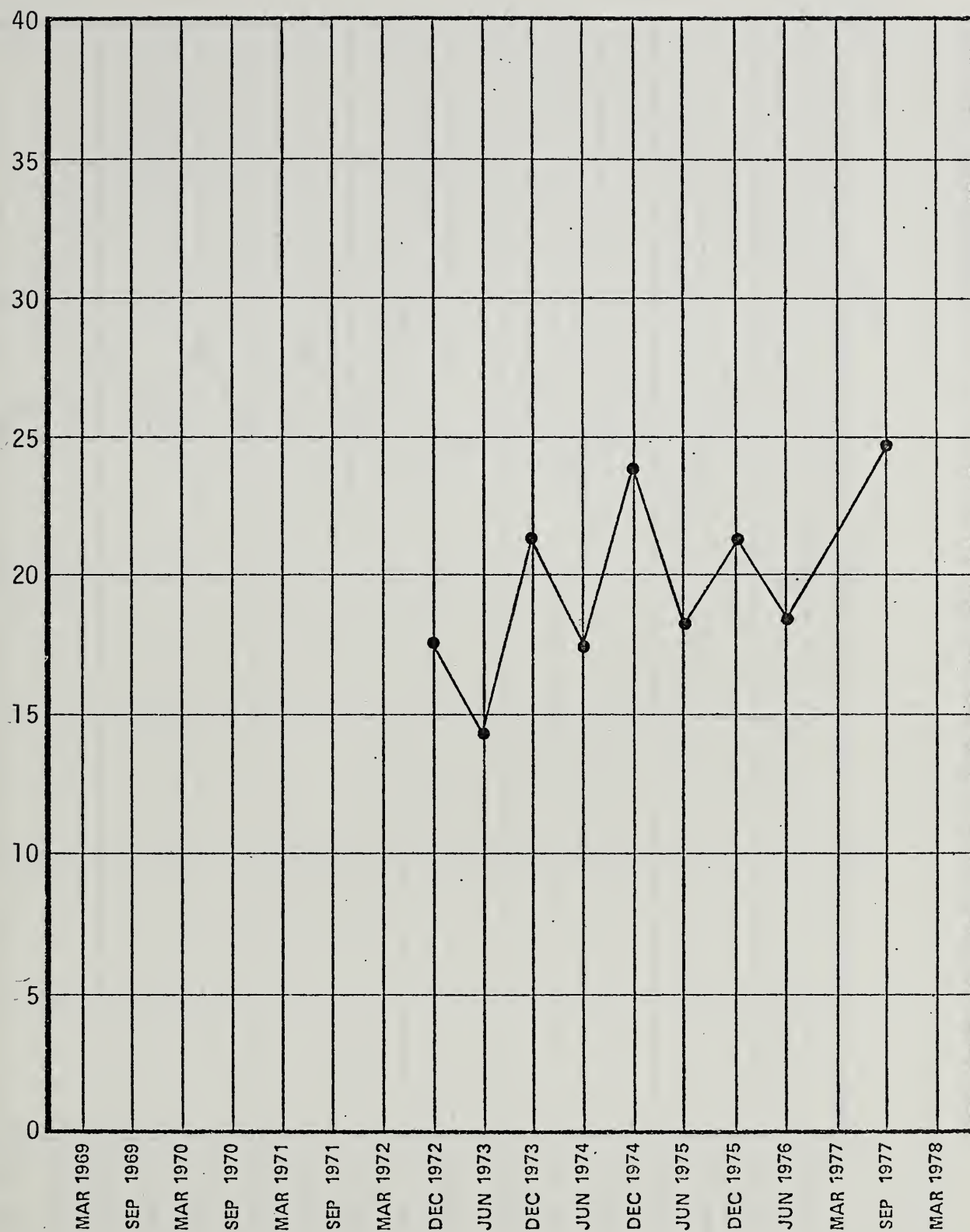


Figure 102: Percentage of Volunteers Working with Adults Only
at the End of the Reporting Period

Percent

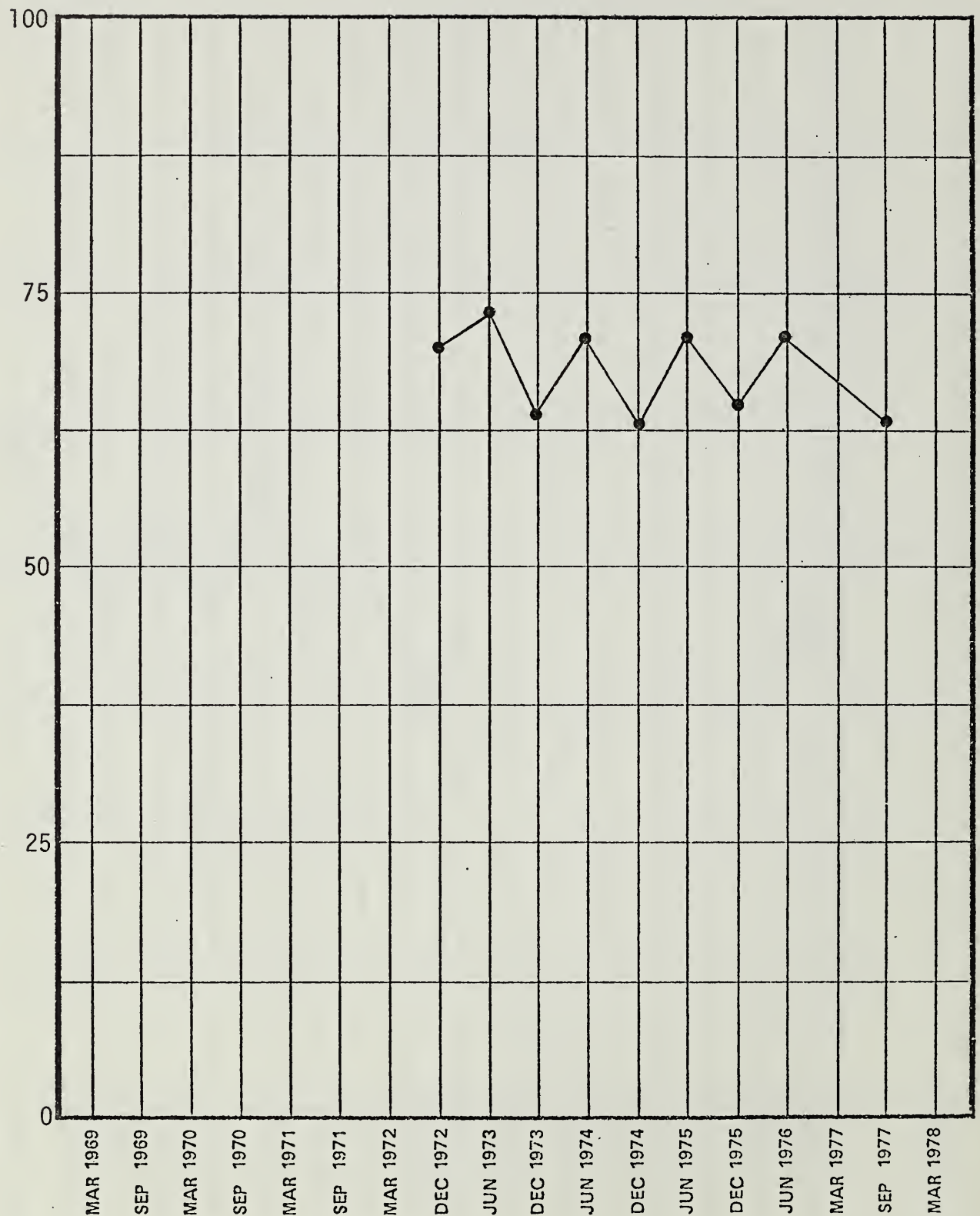


Figure 103: Percentage of Volunteers Working with Youth Only

Percent

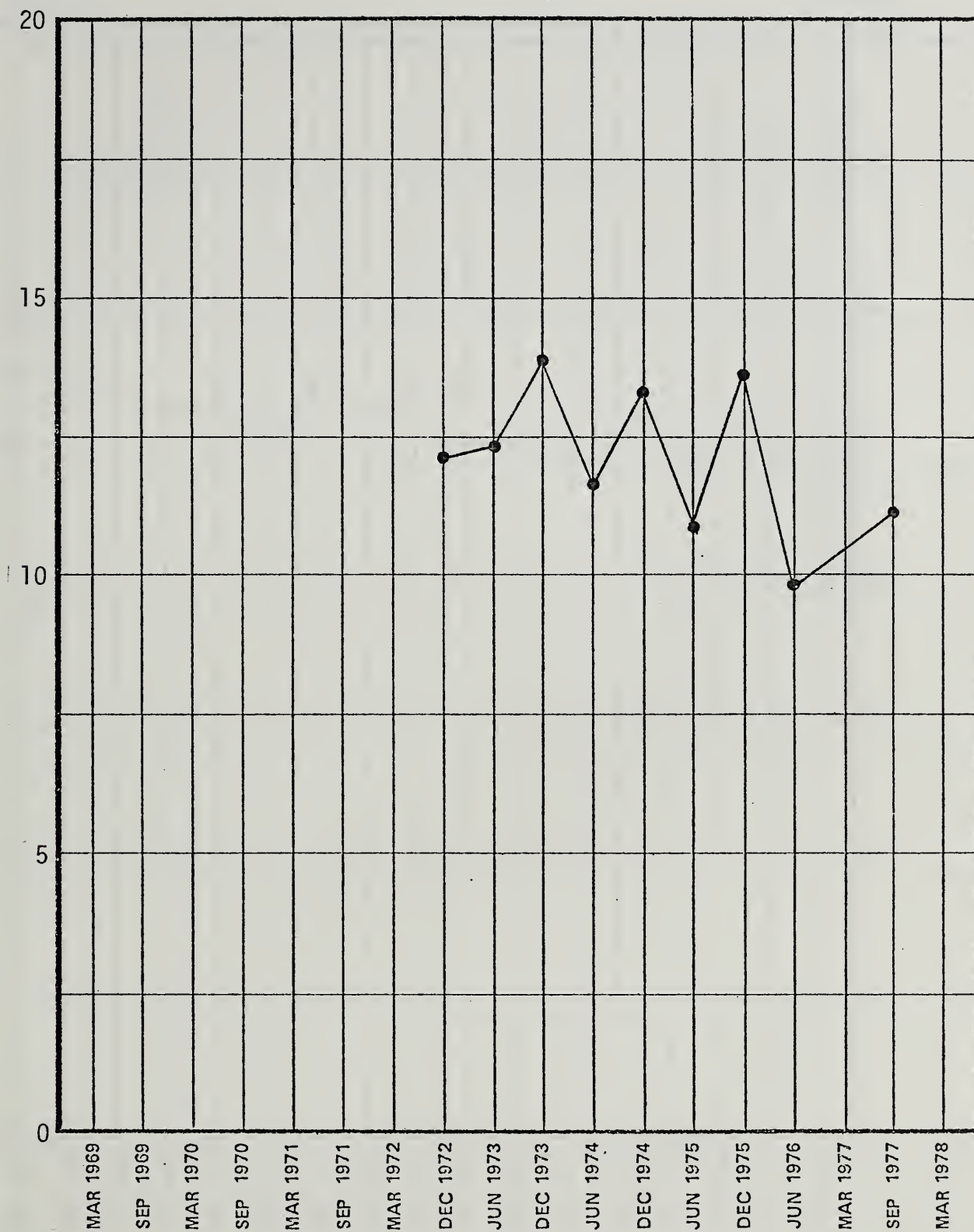


Figure 104: Percentage of Volunteers Working with Youth and Adults

Percent

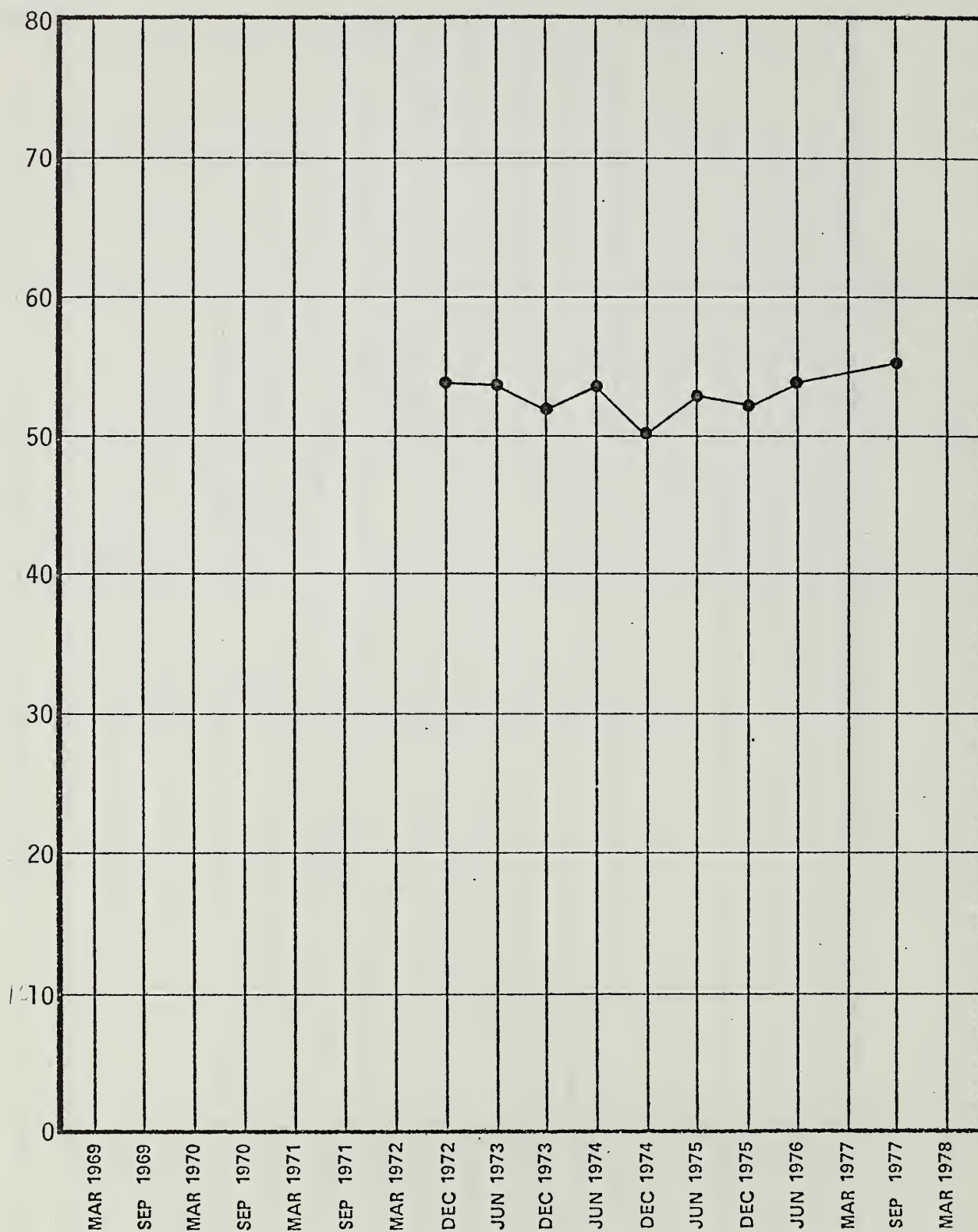


Figure 105: Percentage of White Volunteers

Percent

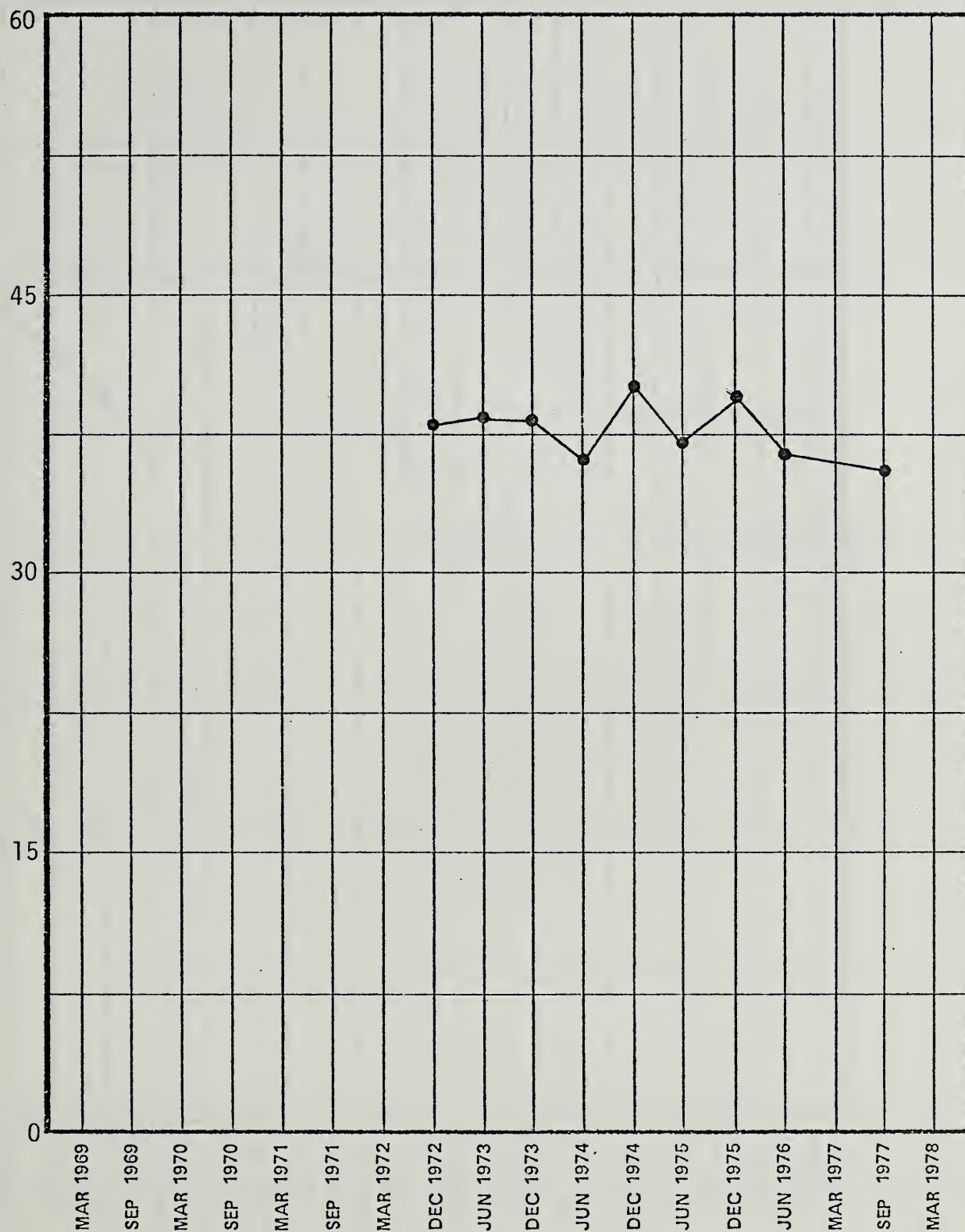


Figure 106: Percentage of Black Volunteers

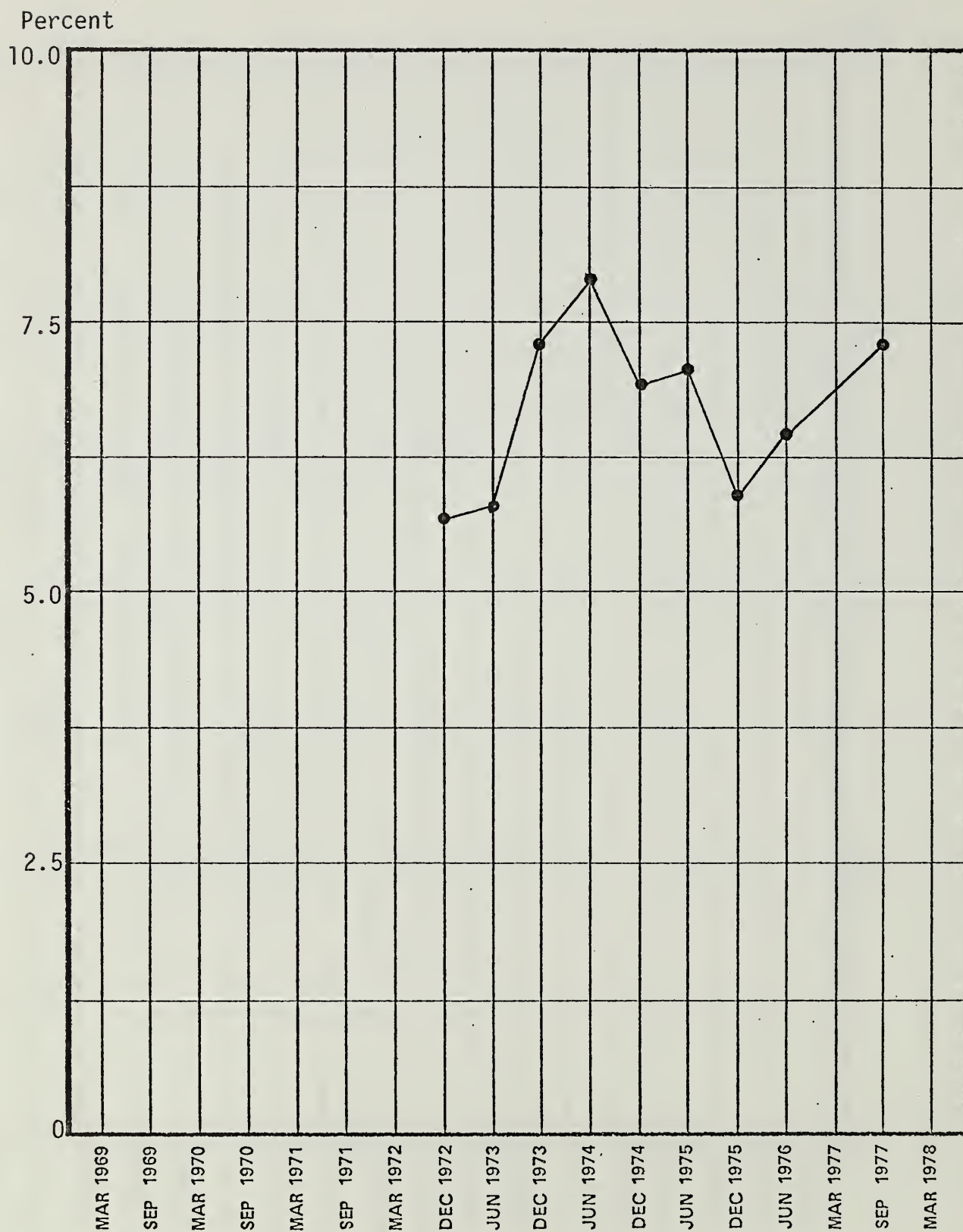


Figure 107: Percentage of Spanish-Surname Volunteers

Percent

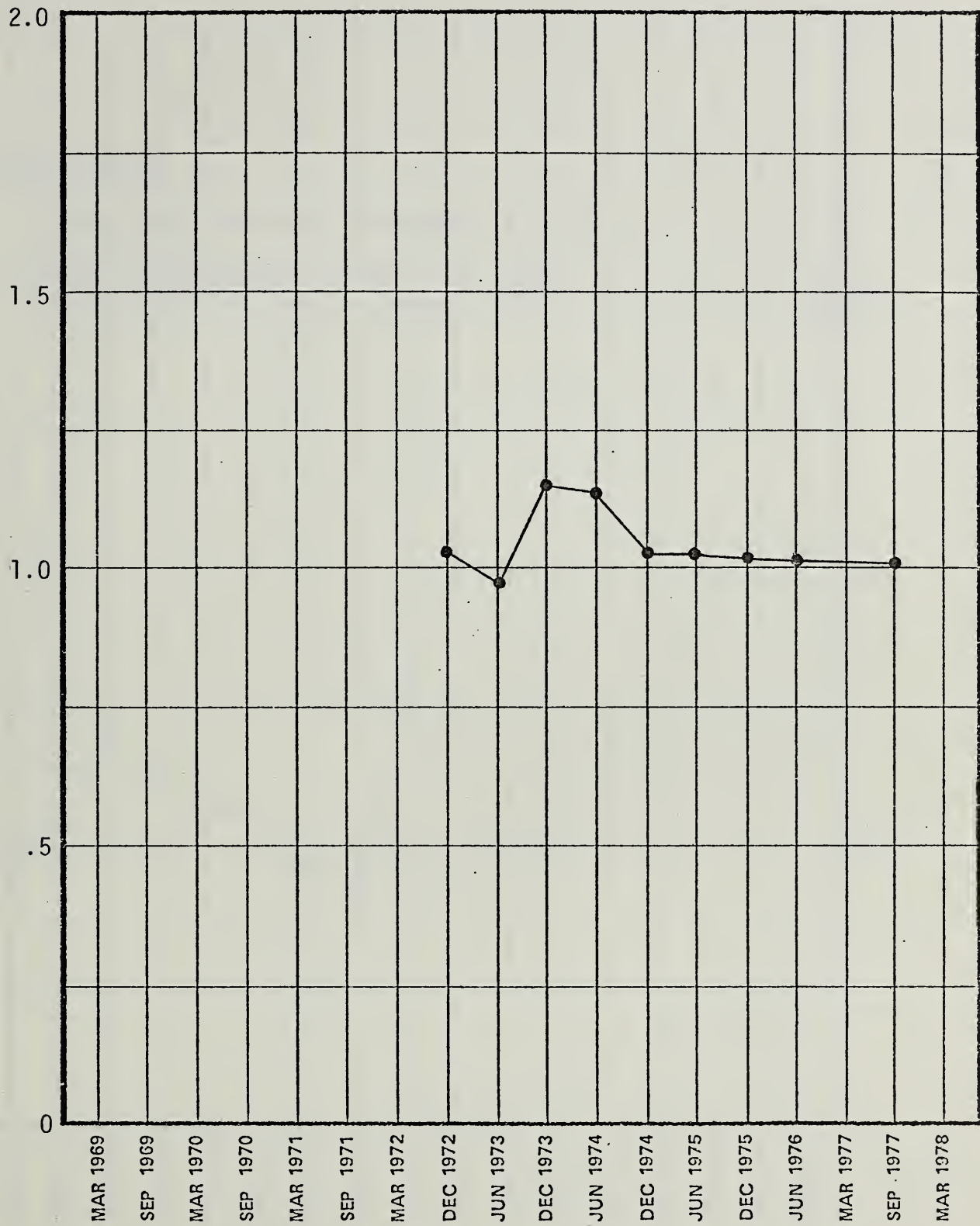


Figure 108: Percentage of American Indian Volunteers

Percent

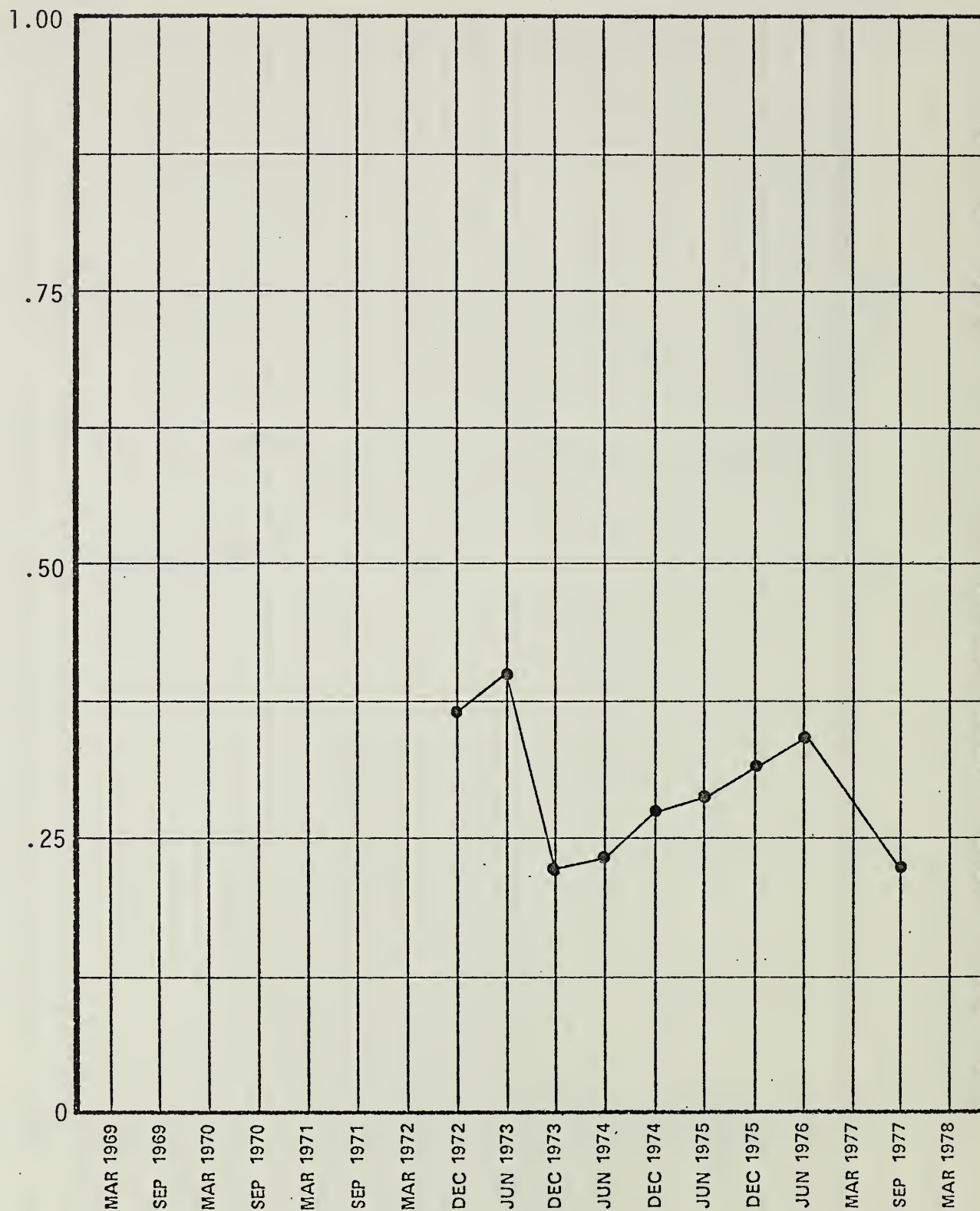


Figure 109: Percentage of Oriental Volunteers

Program Units

Program units reporting (September 30, 1978) 1,052

Counties, independent cities, and Indian
reservations included in program units 1,270



EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM
SEA-EXTENSION

As of September 30, 1978

Families

Program families as of September 1978	196,099
Number of program families worked with during 10/1/77 - 09/30/78	313,985
Total program families since inception of program 2/28/69	1,694,450

Youth in 4-H Type Activities

From program families (10/01/77 - 09/30/78)	146,407
From nonprogram families (10/01/77 - 09/30/78)	494,756
TOTAL YOUTH (as of September 30, 1978)	641,163
Total youth since inception of program	3,911,205

Volunteers (10/01/77 - 09/30/78)

Volunteers working only with youth	38,823
Volunteers working only with adults	14,670
Volunteers working with both youth and adults	5,965
TOTAL VOLUNTEERS	59,458
Total volunteers from FY 1972 to end of current reporting period (September 1978)	309,470

Program Aides

Program Aides as of September 30, 1978	5,215
Full-time equivalents	3,717.7
Program families per FTE	52.74
Number of aides dropped and not replaced over 12-month period	458
Number of full-time equivalent decline over the 12-month period	940.6

Percent

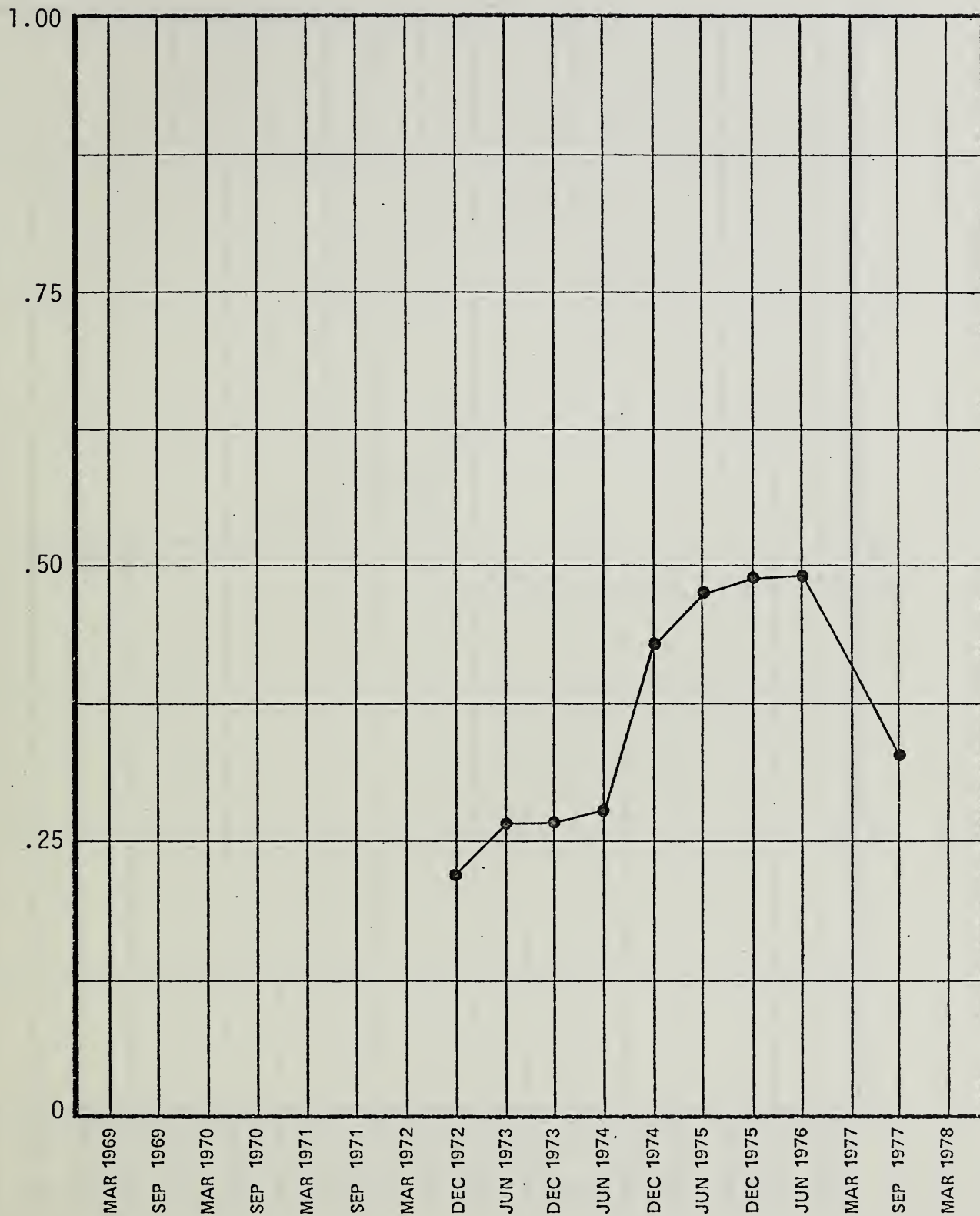


Figure 110: Percentage of "Other" Volunteers

Percent

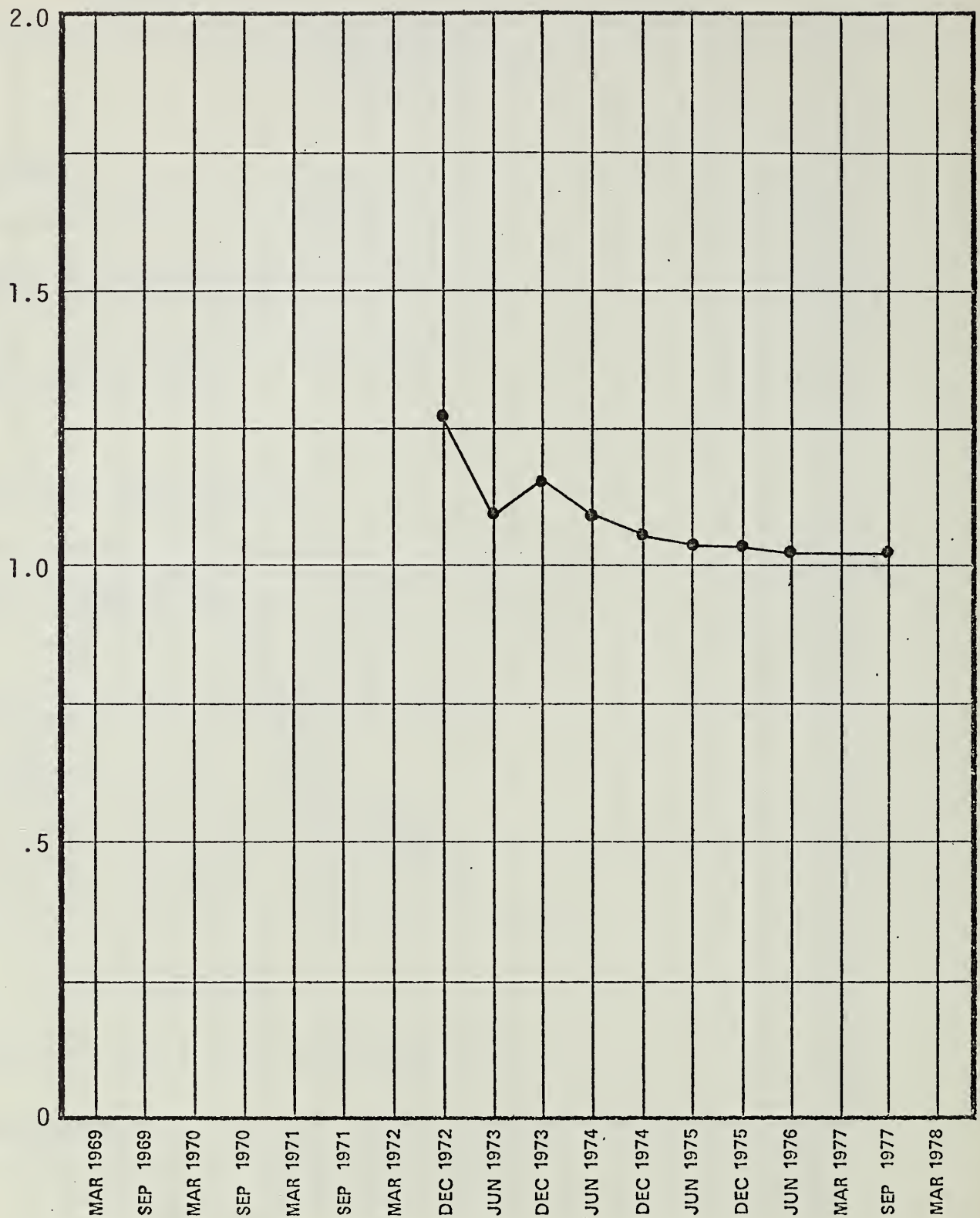


Figure 111: Ratio of the Percentage of White Volunteers to the Percentage of White Youth.

Percent

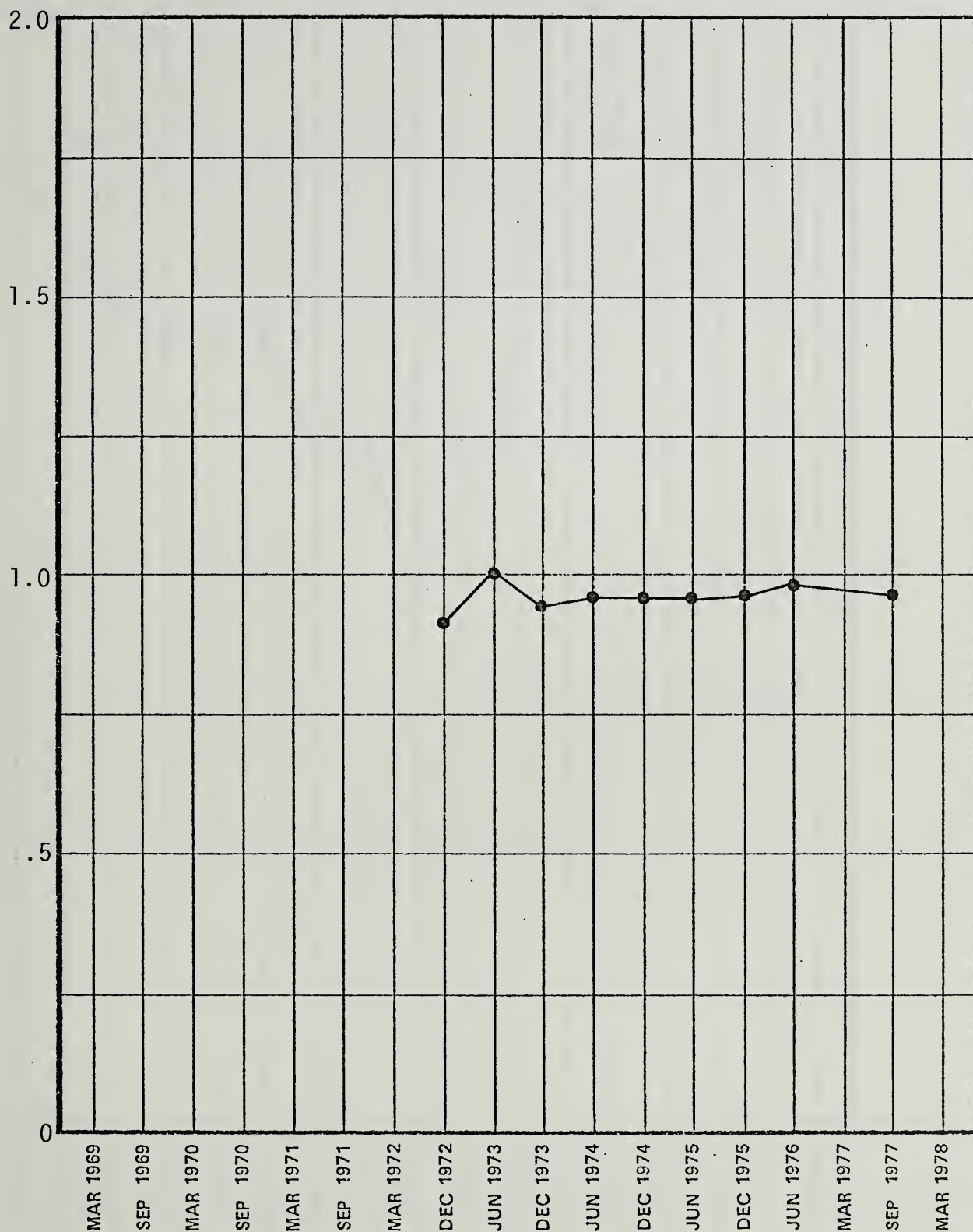


Figure 112: Ratio of the Percentage of Black Volunteers to the Percentage of Black Youth.

Percent

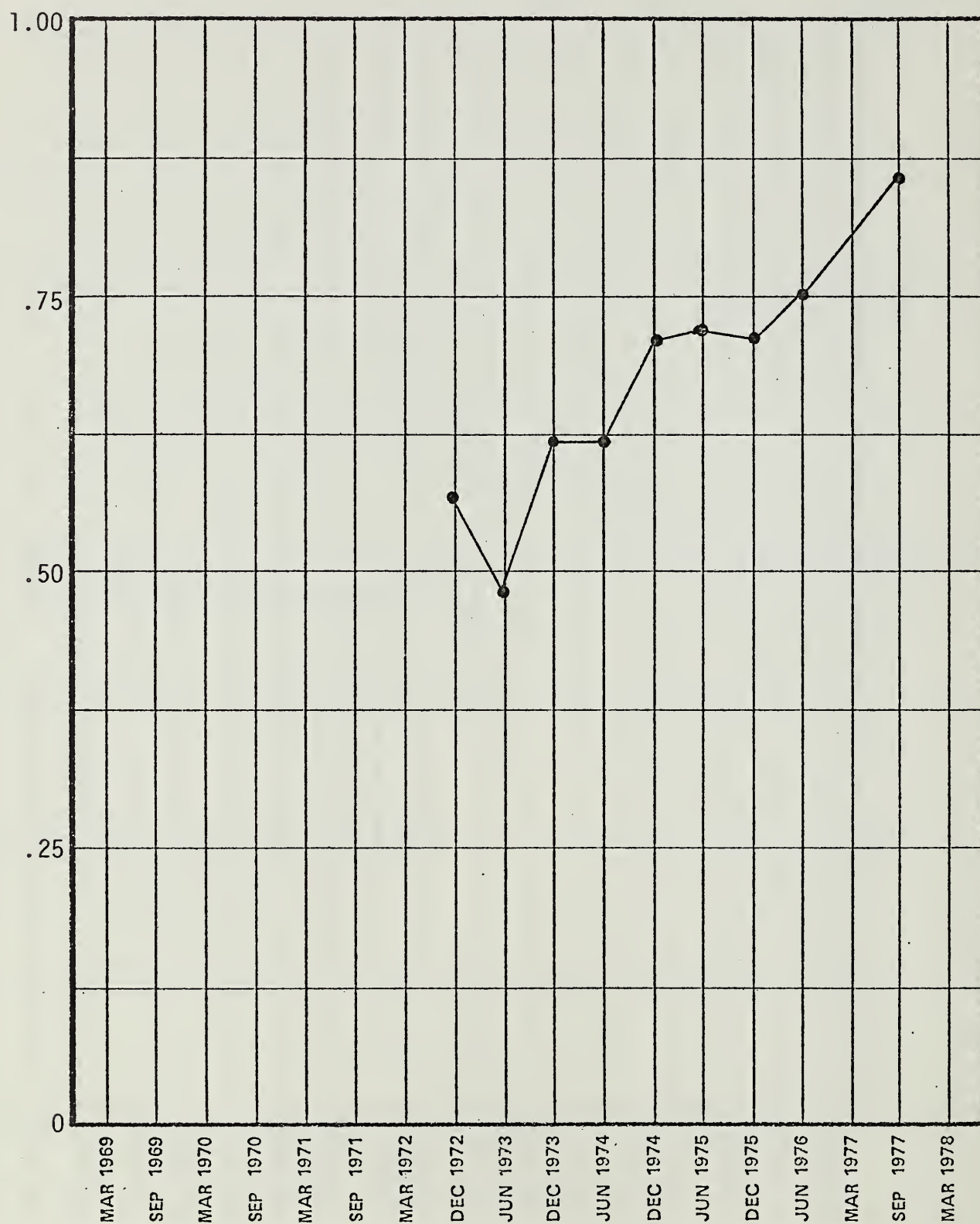


Figure 113: Ratio of the Percentage of Spanish-Surname Volunteers to the Percentage of Spanish-Surname Youth.

Percent

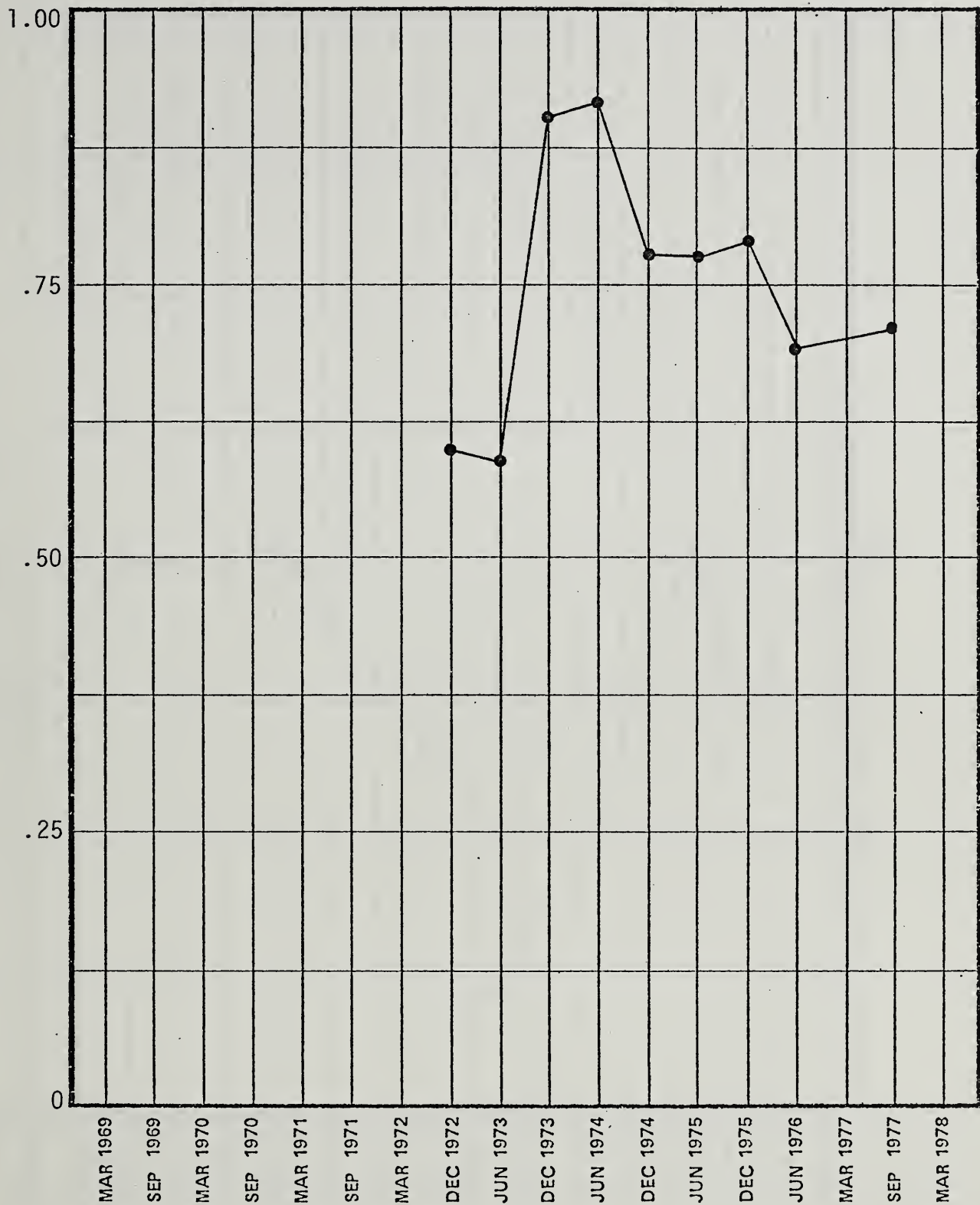


Figure 114: Ratio of the Percentage of American Indian Volunteers to the Percentage of American Indian Youth.

Percent

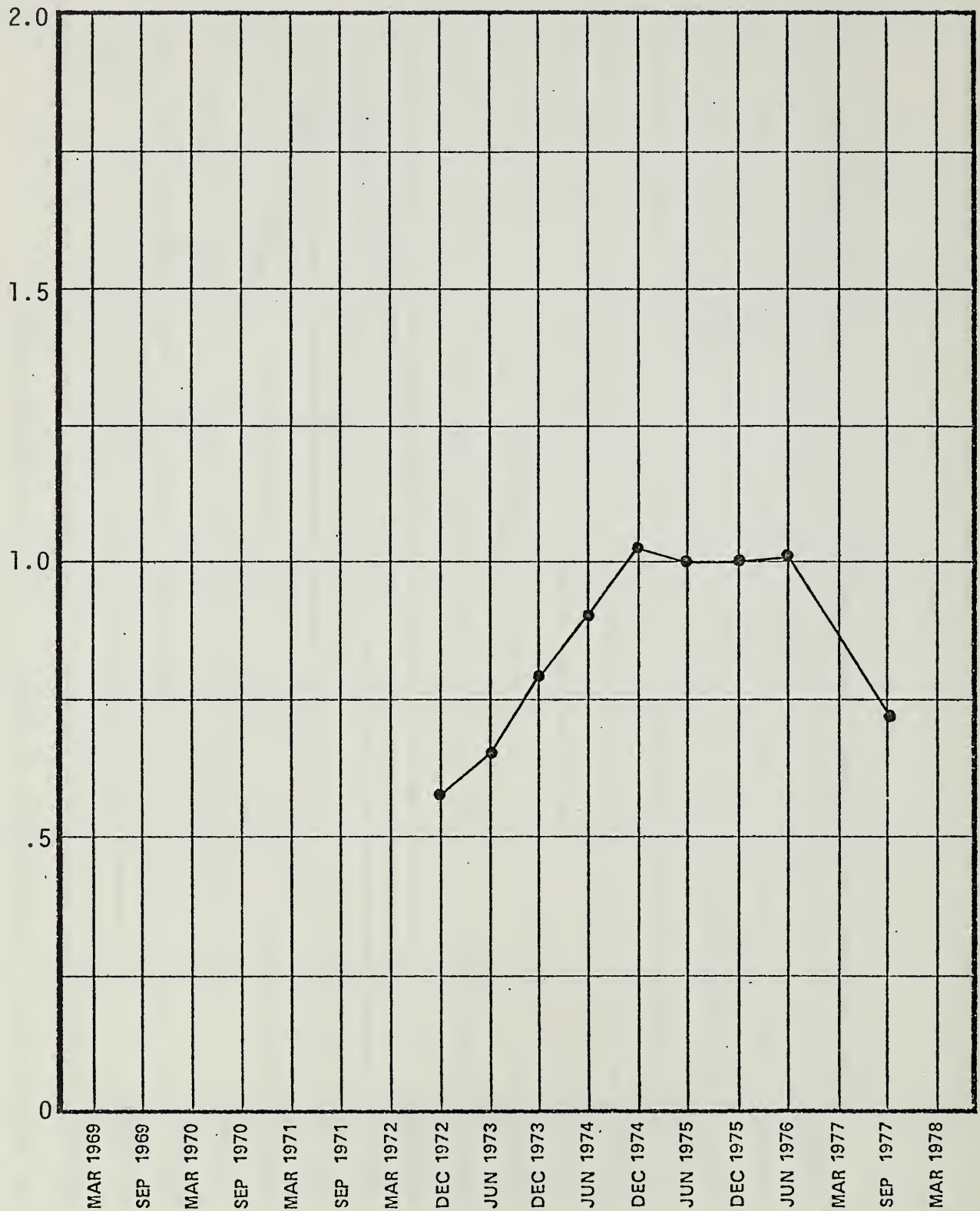


Figure 115: Ratio of the Percentage of Oriental Volunteers to the Percentage of Oriental Youth.

Percent

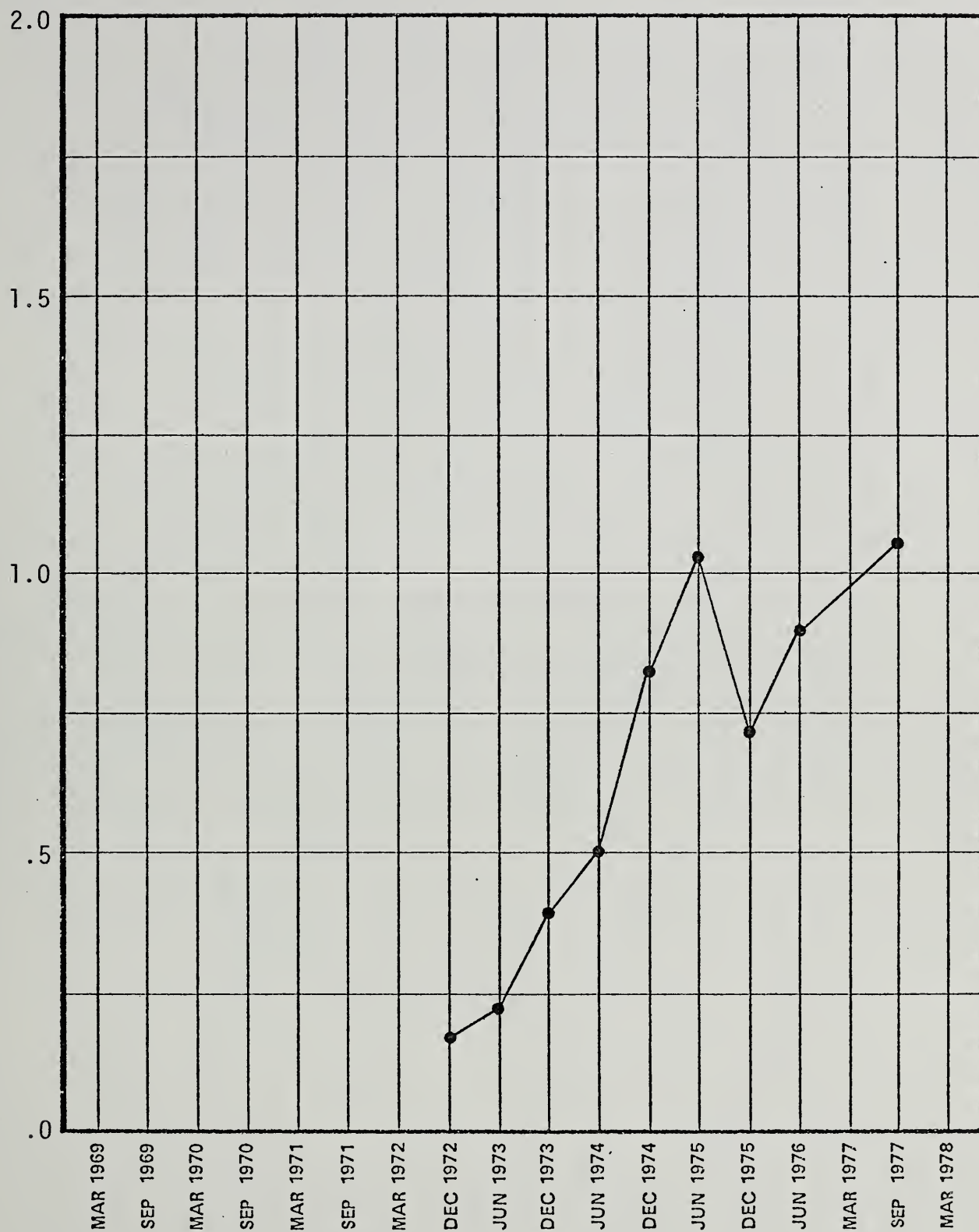


Figure 116: Ratio of the Percentage of "Other" Volunteers to the Percentage of "Other" Youth.

APPENDIX B: TREND DATA TABLES

(Combined Group Data)

	Percentage of Home- makers Reporting Minimum Diets on Food Recall #1	Percentage of Home- makers Reporting Minimum Diets After 24 Months of Program Participation	Percentage of Home- makers Reporting Adequate Diets on Food Recall #1	Percentage of Home- makers Reporting Adequate Diets After 24 Months of Program Participation	Percentage of Home- makers Reporting No Servings of Milk At Program Entry
	FIGURE 2	FIGURE 3	FIGURE 4	FIGURE 5	FIGURE 6
March 1969	50.86	-----	7.18	-----	35.10
September 1969	56.64	-----	9.73	-----	32.00
March 1970	58.11	-----	9.22	-----	30.70
September 1970	57.95	-----	9.91	-----	31.80
March 1971	56.27	79.98	8.46	22.50	33.60
September 1971	54.27	77.68	7.59	24.16	35.70
March 1972	56.95	78.05	8.53	23.40	33.20
December 1972	56.60	77.40	8.20	22.20	30.70
June 1973	54.40	76.20	7.90	20.90	33.20
December 1973	53.50	73.80	8.00	22.30	34.20
June 1974	54.50	81.10	6.40	25.50	34.70
December 1974	53.60	77.90	5.80	24.60	35.40
June 1975	54.70	75.10	6.30	22.50	35.50
December 1975	53.90	73.00	6.30	22.70	35.40
June 1976	52.90	73.80	7.10	24.40	36.10
March 1977	54.70	76.80	6.30	23.20	33.10
September 1977	51.00	76.70	5.50	23.40	35.10
March 1978	51.80	76.60	4.10	21.10	36.40

NUMBER OF OBSERVATIONS	18	14	18	14	18
R	-.54	.420	-.83	.001	.560
R ²	.29	.176	.69	.001	.313
Average of All Observations	54.59	76.72	7.36	23.06	33.99

670 — 24 = 300
B-3

	Percentage of Home- makers Reporting No Servings of Meat At Program Entry	Percentage of Home- makers Reporting No Servings of Vegetables and Fruits At Program Entry	Percentage of Home- makers Reporting No Servings of Breads and Cereals At Program Entry	Percentage of Home- makers Reporting No Servings of Milk After 24 Months of Program Participation	Percentage of Home- makers Reporting No Servings of Meat After 24 Months of Program Participation
	FIGURE 7	FIGURE 8	FIGURE 9	FIGURE 10	FIGURE 11
March 1969	7.70	14.80	3.8	-----	-----
September 1969	5.20	12.30	3.6	-----	-----
March 1970	4.30	12.90	2.8	-----	-----
September 1970	5.00	11.80	3.5	-----	-----
March 1971	4.00	13.40	3.3	13.5	1.8
September 1971	4.40	12.60	3.5	16.0	1.9
March 1972	4.00	12.30	3.3	14.8	1.6
December 1972	4.10	13.50	3.7	14.3	0.9
June 1973	5.40	15.50	3.4	15.1	2.2
December 1973	5.00	14.80	3.4	16.2	2.8
June 1974	6.60	16.90	5.8	13.0	1.7
December 1974	4.30	14.40	3.7	11.8	2.8
June 1975	4.20	13.80	3.7	13.2	1.8
December 1975	4.70	14.80	3.1	13.8	1.8
June 1976	6.20	16.20	3.5	15.0	1.4
March 1977	4.10	12.80	3.3	13.4	0.9
September 1977	4.30	13.80	3.6	13.6	1.0
March 1978	4.20	14.20	3.7	16.7	1.1

NUMBER OF OBSERVATIONS	18	18	18	14	14
R	-.26	.40	.12	-.06	-.50
R ²	.06	.16	.01	<.01	.25
Average of All Observations	4.87	13.93	3.59	14.31	1.75

	Percentage of Home- makers Reporting No Servings of Vegetables and Fruits After 24 Months of Program Participation	Percentage of Home- makers Reporting No Servings of Breads and Cereals After 24 Months of Program Participation	Percentage of Home- makers Reporting 2 or More Servings of Milk at Program Entry	Percentage of Home- makers Reporting 2 or More Servings of Meat at Program Entry	Percentage of Home- makers Reporting 4 or More Servings of Vegetables and Fruits at Program Entry
	FIGURE 12	FIGURE 13	FIGURE 14	FIGURE 15	FIGURE 16
March 1969	-----	-----	33.7	71.8	15.4
September 1969	-----	-----	36.3	74.7	19.3
March 1970	-----	-----	37.3	77.0	18.2
September 1970	-----	-----	36.2	75.8	21.5
March 1971	5.0	0.8	35.4	77.4	19.3
September 1971	3.8	1.0	33.0	76.6	19.9
March 1972	5.1	1.0	35.4	77.2	21.3
December 1972	4.8	0.8	37.5	76.0	21.7
June 1973	5.8	1.1	33.6	74.2	18.8
December 1973	4.4	2.5	33.0	73.1	19.6
June 1974	3.4	1.0	31.0	70.2	17.3
December 1974	4.7	0.8	30.9	75.0	18.1
June 1975	4.4	0.8	30.3	74.0	18.5
December 1975	5.3	1.1	31.7	73.4	19.4
June 1976	3.4	0.8	31.3	72.1	19.0
March 1977	2.7	0.3	31.1	71.6	19.2
September 1977	2.2	0.3	28.4	69.4	18.3
March 1978	2.8	1.2	27.7	71.2	16.1

NUMBER OF OBSERVATIONS	14	14	18	18	18
R	-.67	-.25	-.85	-.64	-.19
R ²	.44	.06	.72	.41	.04
Average of All Observations	4.13	0.96	32.99	73.93	18.94

	Percentage of Home-makers Reporting 4 or More Servings of Breads and Cereals at Program Entry	Percentage of Home-makers Reporting 2 or More Servings of Milk After 24 Months of Program Participation	Percentage of Home-makers Reporting 2 or More Servings of Meat After 24 Months of Program Participation	Percentage of Home-makers Reporting 4 or More Servings of Vegetables and Fruits After 24 Months of Program Participation	Percentage of Home-makers Reporting 4 or More Servings of Breads and Cereals After 24 Months of Program Participation
	FIGURE 17	FIGURE 18	FIGURE 19	FIGURE 20	FIGURE 21
March 1969	34.1	----	----	----	----
September 1969	35.6	----	----	----	----
March 1970	36.7	----	----	----	----
September 1970	38.4	----	----	----	----
March 1971	40.5	59.5	86.7	35.7	57.8
September 1971	39.0	57.2	85.5	43.2	56.3
March 1972	42.6	57.9	86.5	39.1	57.9
December 1972	42.8	57.9	83.7	40.6	56.6
June 1973	41.5	57.7	84.0	39.9	56.5
December 1973	39.4	55.7	83.3	41.2	55.6
June 1974	38.6	59.5	86.8	42.5	61.8
December 1974	38.1	55.0	82.6	43.4	61.0
June 1975	42.4	54.1	81.1	40.9	57.8
December 1975	42.4	57.1	82.4	41.8	58.4
June 1976	41.9	55.1	84.0	44.8	62.4
March 1977	41.3	53.8	84.8	43.0	58.9
September 1977	39.2	54.2	85.6	46.2	64.3
March 1978	41.0	48.2	85.1	39.3	59.7

NUMBER OF OBSERVATIONS	14	14	14	14	14
R	.59	-.78	-.27	.53	.62
R ²	.34	.61	.07	.28	.39
Average of All Observations	39.75	55.92	84.44	41.54	58.93

	Percentage of Difference Between the Percentage of Program Homemakers Reporting Minimum Diets at Program Entry and Percentage of Program Homemakers Reporting Minimum Diets After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Diets at Program Entry and Percentage of Program Homemakers Reporting Adequate Diets After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting No Milk Servings at Program Entry and Percentage of Program Homemakers Reporting No Milk Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting No Meat Servings at Program Entry and Percentage of Program Homemakers Reporting No Meat Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting No Vegetable and Fruit Servings at Program Entry and Percentage of Program Homemakers Reporting No Vegetable and Fruit Servings After 24 Months of Program Participation
	FIGURE 22	FIGURE 23	FIGURE 24	FIGURE 25	FIGURE 26
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	----	----	----	----	----
September 1970	----	----	----	----	----
March 1971	42.14	165.96	59.82	55.00	62.69
September 1971	43.14	218.31	55.18	56.82	69.84
March 1972	37.05	174.33	55.42	60.00	58.34
December 1972	36.75	170.73	53.42	58.54	64.44
June 1973	40.07	164.56	54.52	59.26	62.58
December 1973	37.94	178.75	52.63	44.00	70.27
June 1974	48.81	298.44	62.54	74.24	79.88
December 1974	45.34	324.14	66.67	34.88	67.36
June 1975	37.29	257.14	62.83	57.14	68.12
December 1975	35.44	260.32	61.02	61.70	64.19
June 1976	39.51	243.66	58.45	77.42	79.01
March 1977	40.40	268.25	59.52	78.05	78.91
September 1977	50.39	325.46	61.25	76.74	84.06
March 1978	47.88	414.63	54.12	73.81	80.28

NUMBER OF OBSERVATIONS	14	14	14	14	14
R	.34	.79	.28	.55	.75
R ²	.11	.63	.08	.30	.56
Average of All Observations	41.58	247.48	58.38	61.97	70.73

	Percentage of Difference Between the Percentage of Program Homemakers Reporting No Bread and Cereal Servings at Program Entry and Percentage of Program Homemakers Reporting No Bread and Cereal Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Milk Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Milk Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Meat Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Meat Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Vegetable and Fruit Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Vegetable and Fruit Servings After 24 Months of Program Participation	Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Bread and Cereal Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Bread and Cereal Servings After 24 Months of Program Participation
	FIGURE 27	FIGURE 28	FIGURE 29	FIGURE 30	FIGURE 31
March 1969	-----	-----	-----	-----	-----
September 1969	-----	-----	-----	-----	-----
March 1970	-----	-----	-----	-----	-----
September 1970	-----	-----	-----	-----	-----
March 1971	75.76	68.08	12.02	84.97	42.72
September 1971	71.43	73.33	11.62	117.08	44.36
March 1972	69.98	68.56	12.05	83.57	35.92
December 1972	78.38	54.40	10.13	87.10	32.24
June 1973	67.65	71.73	13.20	112.23	36.14
December 1973	26.47	68.79	13.95	110.20	41.12
June 1974	82.76	91.94	23.65	145.67	60.10
December 1974	78.38	77.99	10.13	139.78	60.10
June 1975	78.38	78.55	9.60	121.08	36.32
December 1975	64.52	80.13	12.26	115.46	37.74
June 1976	77.14	76.04	16.50	135.79	48.93
March 1977	90.91	72.99	18.44	123.96	42.62
September 1977	91.67	90.84	23.34	152.46	64.03
March 1978	67.57	74.01	19.55	144.10	45.61

NUMBER OF OBSERVATIONS	14	14	14	14	14
R	.26	.52	.58	.77	.39
R ²	.07	.27	.34	.59	.15
Average of All Observations	72.91	74.46	14.74	119.53	44.85

	Program Families Active at the End of the Reporting Period	Average Program Family Size	Cumulative Program Families	Non-Program Families at the End of the Reporting Period	Family Income In Current Dollars
	FIGURE 32	FIGURE 33	FIGURE 34	FIGURE 35	FIGURE 36
March 1969	68,758	4.7	71,507 ✓	42,430	217
September 1969	138,666	4.7	184,279	27,948	237
March 1970	204,475	4.8	291,758 ✓	44,117	241
September 1970	243,881	4.8	385,710	55,292	251
March 1971	293,099	4.8	492,155 ✓	110,444	244
September 1971	341,349	4.8	616,526	108,190	255
March 1972	356,306	4.7	710,869 ✓	135,998	256
December 1972	334,245	4.6	833,357	82,449	259
June 1973	320,186	4.6	922,206 ✓	86,220	270
December 1973	305,974	4.5	997,794	95,394	282
June 1974	299,393	4.5	1,076,882 ✓	88,473	291
December 1974	287,963	4.3	1,150,397	81,645	300
June 1975	280,042	4.3	1,234,246	81,663	308
December 1975	256,351	4.2	1,309,475	71,072	317
June 1976	255,471	4.2	1,393,952 ✓	71,763	319
March 1977	----	4.3	----	----	318
September 1977	210,981	4.0	1,569,071 ✓	53,452	338
March 1978	----	3.9	----	----	352

NUMBER OF OBSERVATIONS	16	18	16	16	18
R	.35	-.93	1.00	.18	.99
R ²	.12	.87	.99	.03	.97
Average of All Observations	262,321.25	4.48	827,511.63	77,284.38	280.33

	Family Income in Constant (1957-1959) Dollars	Program Family Food Expenditures in Current Dollars	Program Family Food Expenditures in Constant (1957-1959) Dollars	Percentage of Program Families Receiving Food Stamps	Percentage of Program Families Receiving Donated Foods
	FIGURE 37	FIGURE 38	FIGURE 39	FIGURE 40	FIGURE 41
March 1969	172.52	76	60.42	12.36	22.29
September 1969	183.20	83	64.16	15.2	22.68
March 1970	180.99	84	63.08	16.5	21.10
September 1970	183.48	86	62.87	21.4	18.50
March 1971	174.46	80	57.20	23.5	20.70
September 1971	179.52	84	59.14	24.0	21.20
March 1972	177.67	82	56.91	26.1	20.4
December 1972	175.08	81	54.76	27.8	20.45
June 1973	175.23	84	54.15	32.8	18.08
December 1973	175.12	95	59.00	38.3	11.23
June 1974	169.94	97	56.65	39.6	9.70
December 1974	165.90	101	55.85	48.5	1.45
June 1975	164.78	106	56.71	50.6	0.21
December 1975	163.88	109	56.87	50.9	0.18
June 1976	161.10	112	56.56	48.8	0.20
March 1977	153.94	110	53.13	47.2	0.03
September 1977	157.85	119	55.57	48.6	0.48
March 1978	159.46	125	56.62	48.3	0.75

NUMBER OF OBSERVATIONS	18	18	18	18	18
R	-.90	.93	-.72	.96	-.92
R ²	.81	.87	.52	.91	.85
Average of All Observations	170.78	95.22	57.76	34.48	11.65

	Percentage of Program Family Members Under 19 Years of Age	Percentage of Program Family School Children in School Lunch Programs	Percentage of Program Family Children in School	Percentage of Families Residing in Urban Areas	Percentage of Program Families Worked with Individually
	FIGURE 42	FIGURE 43	FIGURE 44	FIGURE 45	FIGURE 46
March 1969	-----	64.10	-----	53.40	-----
September 1969	-----	60.10	-----	59.10	-----
March 1970	59.57	66.50	66.21	59.10	-----
September 1970	61.00	67.80	65.06	59.10	-----
March 1971	60.62	73.10	65.69	58.70	-----
September 1971	60.91	74.50	65.83	57.90	-----
March 1972	61.07	78.70	64.86	58.30	-----
December 1972	57.60	82.15	66.94	61.82	57.3
June 1973	55.95	83.36	66.97	63.21	61.2
December 1973	52.50	82.81	69.77	64.84	53.8
June 1974	55.98	85.23	67.34	64.01	61.2
December 1974	57.17	86.94	68.68	63.39	61.6
June 1975	57.97	85.70	66.00	63.58	63.9
December 1975	57.79	84.28	66.76	65.39	63.4
June 1976	57.58	84.42	63.41	63.66	66.7
March 1977	56.87	88.30	68.83	59.83	67.0
September 1977	56.20	87.97	68.45	59.52	69.3
March 1978	56.54	87.50	67.33	57.77	71.4

NUMBER OF OBSERVATIONS	16	18	16	18	11
R	-.59	.92	.38	.47	.91
R ²	.35	.84	.14	.22	.83
Average of All Observations	57.83	79.08	66.76	60.70	63.34

	Percentage of Program Homemakers Older Than 55 Years of Age	Percentage of Participating Program Homemakers with an Eighth Grade Education or Less	Percentage of White Program Homemakers	Percentage of Black Program Homemakers	Percentage of Spanish-Surname Program Homemakers
	FIGURE 52	FIGURE 53	FIGURE 54	FIGURE 55	FIGURE 56
March 1969	-----	-----	29.3	54.5	14.0
September 1969	-----	-----	32.5	50.3	14.9
March 1970	-----	-----	33.1	48.0	16.5
September 1970	-----	-----	33.6	47.3	16.7
March 1971	-----	-----	33.8	46.2	17.7
September 1971	-----	-----	34.3	46.6	17.1
March 1972	-----	-----	35.3	45.8	16.8
December 1972	21.5	48.9	36.1	46.3	15.6
June 1973	21.1	49.4	36.8	46.9	14.1
December 1973	20.7	49.5	36.8	47.4	13.8
June 1974	21.8	46.1	36.7	48.0	13.4
December 1974	21.1	45.9	36.5	48.7	12.8
June 1975	19.2	45.5	38.2	46.6	13.1
December 1975	17.4	45.1	38.4	44.8	14.5
June 1976	16.8	44.2	38.0	44.2	15.5
March 1977	15.2	41.7	-----	-----	-----
September 1977	15.7	41.2	38.6	44.2	14.8
March 1978	15.4	39.2	-----	-----	-----

NUMBER OF OBSERVATIONS	11	18	16	16	16
R	-.94	.58	.94	-.67	-.45
R ²	.88	.33	.88	.45	.20
Average of All Observations	18.72	41.12	35.49	47.25	15.09

	Percentage of Program Families Worked with in Groups	Percentage of Program Families Worked with Both Individually and in Groups	Percentage of Program Families Receiving Welfare	Percentage of Program Homemakers Under 24 Years of Age	Percentage of Program Homemakers 25 - 55 Years of Age
	FIGURE 47	FIGURE 48	FIGURE 49	FIGURE 50	FIGURE 51
March 1969	----	----	29.1	----	----
September 1969	----	----	31.8	----	----
March 1970	----	----	32.1	----	----
September 1970	----	----	34.0	----	----
March 1971	----	----	34.6	----	----
September 1971	----	----	36.7	----	----
March 1972	----	----	36.4	----	----
December 1972	10.4	9.4	34.7	15.9	62.6
June 1973	12.4	9.0	37.0	17.0	61.9
December 1973	13.1	9.1	38.0	15.9	63.3
June 1974	15.1	6.8	36.2	15.9	62.3
December 1974	11.6	5.7	35.5	16.6	62.3
June 1975	13.4	6.3	35.2	18.3	62.5
December 1975	13.7	6.4	33.8	20.1	62.5
June 1976	15.6	5.4	32.6	20.2	62.9
March 1977	12.4	5.3	33.4	21.9	62.9
September 1977	8.8	4.5	34.2	21.5	62.7
March 1978	11.5	4.1	33.6	21.9	62.6

NUMBER OF OBSERVATIONS	11	11	18	11	11
R	-.15	-.94	.24	.94	.29
R ²	.02	.87	.06	.88	.08
Average of All Observations	12.54	6.54	34.38	18.66	62.58

	Percentage of American Indian Program Homemakers	Percentage of Oriental Program Homemakers	Percentage of Other Program Homemakers	Ratio of Percentage of White Aides to Percentage of White Homemakers	Ratio of Percentage of Black Aides to Percentage of Black Homemakers
	FIGURE 57	FIGURE 58	FIGURE 59	FIGURE 60	FIGURE 61
March 1969	1.9	0.1	0.3	1.37	0.86
September 1969	1.9	0.1	0.3	1.19	0.95
March 1970	1.9	0.1	0.4	1.31	0.89
September 1970	1.9	0.1	0.4	1.32	0.89
March 1971	1.8	0.1	0.3	1.38	0.85
September 1971	1.5	0.0	0.3	1.38	0.84
March 1972	1.5	0.1	0.4	1.34	0.84
December 1972	1.4	0.1	0.4	1.29	0.85
June 1973	1.5	0.1	0.4	1.27	0.85
December 1973	1.5	0.1	0.4	1.28	0.84
June 1974	1.3	0.1	0.4	1.26	0.85
December 1974	1.2	0.2	0.5	1.29	0.83
June 1975	1.3	0.3	0.4	1.26	0.84
December 1975	1.4	0.3	0.5	1.21	0.89
June 1976	1.4	0.4	0.5	1.23	0.90
March 1977	----	----	----	----	----
September 1977	1.6	0.3	0.4	1.23	0.89
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	16	16	16	16	16
R	-.78	.80	.74	.33	-.15
R ²	.60	.65	.56	.11	.02
Average of All Observations	1.57	.16	.40	1.20	.87

	Ratio of Percentage of Spanish-Surname Aides to Percentage of Spanish-Surname Homemakers	Ratio of Percentage of American Indian Aides to Percentage of American Indian Homemakers	Ratio of Percentage of Oriental Aides to Percentage of Oriental Homemakers	Ratio of Percentage of Other Aides to Percentage of Other Homemakers	Percentage of Program Families Receiving FHA Assistance
	FIGURE 62	FIGURE 63	FIGURE 64	FIGURE 65	FIGURE 66
March 1969	0.76	0.79	-----	1.67	-----
September 1969	0.75	0.89	1.00	1.33	-----
March 1970	0.67	1.10	1.00	1.75	-----
September 1970	0.66	1.11	2.00	0.75	-----
March 1971	0.67	1.17	1.00	1.00	-----
September 1971	0.64	1.27	1.00	1.00	-----
March 1972	0.68	1.33	2.00	1.25	-----
December 1972	0.74	1.17	1.92	0.80	2.53
June 1973	0.78	1.16	2.09	0.79	2.29
December 1973	0.78	1.27	1.64	1.09	2.68
June 1974	0.80	1.26	1.90	1.10	3.25
December 1974	0.80	1.30	1.00	0.92	3.02
June 1975	0.81	1.06	0.92	1.14	3.60
December 1975	0.78	0.95	0.80	1.10	2.57
June 1976	0.75	0.98	0.74	1.06	2.52
March 1977	-----	-----	-----	-----	3.30
September 1977	0.72	1.05	0.94	1.10	3.17
March 1978	-----	-----	-----	-----	2.97

NUMBER OF OBSERVATIONS	16	16	16	16	11
R	.49	.14	-.27	-.40	.42
R ²	.24	.02	.07	.16	.18
Average of All Observations	.74	1.12	1.33	1.12	2.90

	Total EFNEP Aides at the End of the Reporting Period	Total Full-time Equivalent at the End of the Reporting Period	Percentage of White Aides	Percentage of Black Aides	Percentage of Spanish-Surname Aides
	FIGURE 67	FIGURE 68	FIGURE 69	FIGURE 70	FIGURE 71
March 1969	4,459	2,965.9	40.2	47.1	10.6
September 1969	4,314	3,262.5	38.7	48.0	11.2
March 1970	6,886	5,378.6	43.3	42.9	11.0
September 1970	6,683	5,027.2	44.3	42.0	11.0
March 1971	9,073	7,346.6	46.5	39.1	11.9
September 1971	8,921	6,934.1	47.5	39.2	10.9
March 1972	9,061	7,131.8	47.4	38.4	11.5
December 1972	8,651	6,460.2	46.7	39.5	11.5
June 1973	8,080	6,390.4	46.6	40.1	11.0
December 1973	7,617	5,793.1	46.9	39.6	10.9
June 1974	7,109	5,295.5	46.2	40.8	10.7
December 1974	6,858	5,186.3	47.0	40.2	10.5
June 1975	6,846	5,166.6	48.0	39.2	10.6
December 1975	6,605	4,881.2	46.5	40.0	11.4
June 1976	6,518	4,834.0	46.5	39.6	11.6
March 1977	----	----	----	----	----
September 1977	5,669	4,658.3	47.6	39.2	10.7
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	16	16	16	16	16
R	.05	.06	.71	-.64	-.11
R ²	<.01	<.01	.50	.41	.01
Average of All Observations	7,084.38	5,419.52	45.62	40.94	11.06

	Percentage of American Indian Aides	Percentage of Oriental Aides	Percentage of Other Aides	Program Families Per FTE Aide	Aide Visits Per Program Family
	FIGURE 72	FIGURE 73	FIGURE 74	FIGURE 75	FIGURE 76
March 1969	1.5	0.0	0.5	23.20	.93
September 1969	1.7	0.1	0.4	42.50	.80
March 1970	2.1	0.1	0.7	38.00	.80
September 1970	2.1	0.2	0.3	48.50	.79
March 1971	2.1	0.1	0.3	39.90	.80
September 1971	1.9	0.1	0.3	49.20	.78
March 1972	2.0	0.2	0.5	50.00	.79
December 1972	1.7	0.2	0.3	51.73	.90
June 1973	1.7	0.2	0.3	50.10	.99
December 1973	1.9	0.2	0.5	52.81	.83
June 1974	1.7	0.2	0.5	56.35	1.03
December 1974	1.6	0.2	0.5	55.52	.98
June 1975	1.4	0.3	0.5	54.20	1.04
December 1975	1.3	0.2	0.5	52.51	1.09
June 1976	1.3	0.3	0.5	52.84	1.14
March 1977	----	----	----	----	1.08
September 1977	1.7	0.3	0.4	45.29	1.12
March 1978	----	----	----	----	1.21

NUMBER OF OBSERVATIONS	16	16	16	16	18
R	-.57	.87	.17	.66	.97
R ²	.32	.75	.03	.44	.76
Average of All Observations	1.73	.19	.44	47.66	.95

	Total Youth Enrolled at the End of the Reporting Period	Youth from Program Families at the End of the Reporting Period	Youth from Non-Program Families Enrolled at the End of the Reporting Period	Cumulative Total Youth	Cumulative Youth from Program Families
	FIGURE 77	FIGURE 78	FIGURE 79	FIGURE 80	FIGURE 81
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	50,228	29,957	20,271	----	----
September 1970	90,696	52,906	37,790	----	----
March 1971	160,424	66,537	93,887	----	----
September 1971	152,285	80,388	71,897	----	----
March 1972	261,152	97,618	163,534	----	----
December 1972	189,980	76,895	113,085	1,166,051 ✓	418,701
June 1973	225,313	99,959	125,354	1,425,595	464,064
December 1973	189,741	76,310	113,431	1,689,438 ✓	515,713
June 1974	221,985	99,355	122,630	1,954,138	562,637
December 1974	194,146	76,025	118,121	2,213,761 ✓	612,734
June 1975	213,950	84,975	128,975	2,442,077	653,997
December 1975	187,171	65,157	122,014	2,703,454 ✓	703,392
June 1976	215,986	78,290	137,696	2,934,777	742,659
March 1977	----	----	----	----	----
September 1977	141,441	45,662	95,779	3,488,667 ✓	829,870
March 1978	----	----	----	----	----

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NUMBER OF OBSERVATIONS	14	14	14	9	9
R	.45	.16	.57	>.99	>.99
R ²	.21	.03	.33	>.99	>.99
Average of All Observations	178,178.44	73,573.86	104,604.58	2,224,218.00	611,529.63

	Cumulative Youth from Non-Program Families	Youth Per Program Family at the End of the Reporting Period	Ratio of Youth from Program Families to Youth from Non-Program Families (at End of Reporting Period)	Percentage of Female Youth Less Than 9 Years Old	Percentage of Female Youth 9 - 14 Years Old
	FIGURE 82	FIGURE 83	FIGURE 84	FIGURE 85	FIGURE 86
March 1969	-----	-----	-----	-----	-----
September 1969	-----	-----	-----	-----	-----
March 1970	-----	0.25	1.48	-----	-----
September 1970	-----	0.37	1.40	-----	-----
March 1971	-----	0.55	0.71	-----	-----
September 1971	-----	0.45	1.12	-----	-----
March 1972	-----	0.73	0.60	-----	-----
December 1972	747,350	0.57	0.68	28.56	55.56
June 1973	961,531	0.70	0.80	26.44	58.70
December 1973	1,173,725	0.62	0.67	24.51	57.37
June 1974	1,391,501	0.74	0.81	25.81	59.94
December 1974	1,691,027	0.67	0.64	26.04	62.47
June 1975	1,788,080	0.76	0.66	26.22	61.98
December 1975	2,000,062	0.73	0.53	27.97	59.49
June 1976	2,192,118	0.84	0.57	27.16	60.76
March 1977	-----	-----	-----	28.92	58.60
September 1977	2,658,797	0.67	0.47	28.86	58.25
March 1978	-----	-----	-----	31.47	56.12

NUMBER OF OBSERVATIONS	9	14	14	11	11
R	>.99	.79	-.77	.67	.02
R ²	>.99	.62	.60	.45	< .01
Average of All Observations	1,622,688.00	.62	.80	27.45	59.02

	Percentage of Female Youth Older Than 14 Years	Percentage of Male Youth Less Than 9 Years Old	Percentage of Male Youth 9 - 14 Years Old	Percentage of Male Youth Older Than 14 Years	Percentage of White Youth
	FIGURE 87	FIGURE 88	FIGURE 89	FIGURE 90	FIGURE 91
March 1969	-----	-----	-----	-----	-----
September 1969	-----	-----	-----	-----	-----
March 1970	-----	-----	-----	-----	-----
September 1970	-----	-----	-----	-----	-----
March 1971	-----	-----	-----	-----	-----
September 1971	-----	-----	-----	-----	-----
March 1972	-----	-----	-----	-----	-----
December 1972	15.86	34.11	53.45	12.42	43.17
June 1973	14.85	30.98	57.99	11.01	46.71
December 1973	18.10	28.82	56.33	14.84	44.40
June 1974	14.24	29.17	60.00	10.82	46.53
December 1974	11.48	29.92	61.33	8.73	44.94
June 1975	11.56	30.23	60.14	9.62	48.00
December 1975	12.52	31.06	59.28	9.64	47.20
June 1976	12.06	29.85	61.18	8.96	50.63
March 1977	12.47	33.59	57.00	9.31	-----
September 1977	12.78	33.28	56.84	9.74	50.43
March 1978	12.26	35.70	54.68	9.44	-----

NUMBER OF OBSERVATIONS	11	11	11	11	9
R	-.66	.48	.02	-.64	.86
R ²	.44	.23	<.00	.41	.74
Average of All Observations	13.47	31.52	58.03	10.41	46.90

	Percentage of Black Youth	Percentage of Spanish-Surname Youth	Percentage of American Indian Youth	Percentage of Oriental Youth	Percentage of Other Youth
	FIGURE 92	FIGURE 93	FIGURE 94	FIGURE 95	FIGURE 96
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	----	----	----	----	----
September 1970	----	----	----	----	----
March 1971	----	----	----	----	----
September 1971	----	----	----	----	----
March 1972	----	----	----	----	----
December 1972	42.45	10.05	1.72	0.63	1.15
June 1973	38.00	11.87	1.65	0.61	1.13
December 1973	41.18	11.98	1.43	0.28	0.70
June 1974	38.39	12.85	1.37	0.27	0.54
December 1974	43.12	9.83	1.36	0.25	0.52
June 1975	39.75	10.02	1.37	0.29	0.45
December 1975	41.96	8.46	1.34	0.32	0.70
June 1976	38.06	8.87	1.52	0.34	0.56
March 1977	----	----	----	----	----
September 1977	38.97	8.57	1.44	0.30	0.20
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	9	9	9	9	9
R	-.26	-.70	-.53	-.60	-.82
R ²	.07	.49	.28	.35	.68
Average of All Observations	40.21	10.28	1.47	.37	.67

	Total Volunteers at the End of the Reporting Period	Volunteers Working With Adults at the End of the Reporting Period	Volunteers Working Only With Youth at the End of the Reporting Period	Volunteers Working With Youth and Adults at the End of the Reporting Period	Volunteers Per Program Family at the End of the Reporting Period
	FIGURE 97	FIGURE 98	FIGURE 99	FIGURE 100	FIGURE 101
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	----	----	----	----	----
September 1970	----	----	----	----	----
March 1971	----	----	----	----	----
September 1971	----	----	----	----	----
March 1972	----	----	----	----	----
December 1972	19,455	3,408	13,680	2.367	0.058
June 1973	21,521	3,123	15,730	2.668	0.067
December 1973	18,212	3,894	11,803	2,515	0.059
June 1974	21,413	3,704	15,215	2,494	0.071
December 1974	18,447	4,368	11,627	2,452	0.064
June 1975	21,426	3,877	15,227	2,322	0.077
December 1975	17,548	3,727	11,428	2,393	0.068
June 1976	22,615	4,160	16,242	2,213	0.089
March 1977	----	----	----	----	----
September 1977	14,866	3,692	9,511	1,663	0.070
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	9	9	9	9	9
R	-.39	.44	-.38	-.81	.60
R ²	.15	.19	.14	.65	.36
Average of All Observations	19,500.33	3,772.56	13,384.78	2,343.00	.07

	Percentage of Volunteers Working With Adults Only at the End of the Reporting Period	Percentage of Volunteers Working Only With Youth at the End of the Reporting Period	Percentage of Volunteers Working With Youth and Adults at the End of the Reporting Period	Percentage of White Volunteers	Percentage of Black Volunteers
	FIGURE 102	FIGURE 103	FIGURE 104	FIGURE 105	FIGURE 106
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	----	----	----	----	----
September 1970	----	----	----	----	----
March 1971	----	----	----	----	----
September 1971	----	----	----	----	----
March 1972	----	----	----	----	----
December 1972	17.52	70.32	12.17	54.85	37.73
June 1973	14.51	73.09	12.40	54.36	38.16
December 1973	21.38	64.81	13.81	52.89	37.93
June 1974	17.30	71.05	11.65	54.17	36.03
December 1974	23.68	63.03	13.29	50.74	40.56
June 1975	18.09	71.07	10.84	53.75	37.26
December 1975	21.26	65.12	13.64	52.69	39.51
June 1976	18.39	71.82	9.79	54.90	36.53
March 1977	----	----	----	----	----
September 1977	24.84	63.98	11.19	55.25	35.88
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	9	9	9	9	9
R	.61	-.37	-.43	.13	-.28
R ²	.37	.13	.19	.02	.08
Average of All Observations	19.66	68.25	12.09	53.73	37.73

	Percentage of Spanish-Surname Volunteers	Percentage of American Indian Volunteers	Percentage of Oriental Volunteers	Percentage of Other Volunteers	Ratio of the Percentage of White Volunteers to the Percentage of White Youth
	FIGURE 107	FIGURE 108	FIGURE 109	FIGURE 110	FIGURE 111
March 1969	----	----	----	----	----
September 1969	----	----	----	----	----
March 1970	----	----	----	----	----
September 1970	----	----	----	----	----
March 1971	----	----	----	----	----
September 1971	----	----	----	----	----
March 1972	----	----	----	----	----
December 1972	5.76	1.04	0.37	0.22	1.27
June 1973	5.82	0.97	0.40	0.26	1.16
December 1973	7.37	1.29	0.22	0.26	1.19
June 1974	8.00	1.27	0.23	0.27	1.16
December 1974	6.92	1.07	0.27	0.42	1.13
June 1975	7.14	1.06	0.29	0.48	1.12
December 1975	5.92	1.04	0.32	0.49	1.12
June 1976	6.66	1.03	0.35	0.49	1.08
March 1977	----	----	----	----	----
September 1977	7.31	1.00	0.22	0.31	1.09
March 1978	----	----	----	----	----

NUMBER OF OBSERVATIONS	9	9	9	9	9
R	.30	-.29	-.37	.60	-.87
R ²	.09	.09	.14	.36	.76
Average of All Observations	6.76	1.09	.30	.36	1.15

	Ratio of the Percentage of Black Volunteers to the Percentage of Black Youth	Ratio of the Percentage of Spanish-Surname Volunteers to the Percentage of Spanish-Surname Youth	Ratio of the Percentage of American Indian Volunteers to the Percentage of American Indian Youth	Ratio of the Percentage of Oriental Volunteers to the Percentage of Oriental Youth	Ratio of the Percentage of Other Volunteers to the Percentage of Other Youth
	FIGURE 112	FIGURE 113	FIGURE 114	FIGURE 115	FIGURE 116
March 1969	-----	-----	-----	-----	-----
September 1969	-----	-----	-----	-----	-----
March 1970	-----	-----	-----	-----	-----
September 1970	-----	-----	-----	-----	-----
March 1971	-----	-----	-----	-----	-----
September 1971	-----	-----	-----	-----	-----
March 1972	-----	-----	-----	-----	-----
December 1972	0.89	0.57	0.60	0.59	0.19
June 1973	1.00	0.49	0.59	0.66	0.23
December 1973	0.92	0.62	0.90	0.79	0.37
June 1974	0.94	0.62	0.92	0.85	0.50
December 1974	0.94	0.70	0.77	1.08	0.81
June 1975	0.94	0.71	0.77	1.00	1.07
December 1975	0.94	0.70	0.78	1.00	0.70
June 1976	0.96	0.75	0.68	1.03	0.88
March 1977	-----	-----	-----	-----	-----
September 1977	0.92	0.85	0.69	0.73	1.19
March 1978	-----	-----	-----	-----	-----

NUMBER OF OBSERVATIONS	9	9	9	9	9
R	.02	.94	.48	.48	.91
R ²	<.01	.89	<.01	.22	.83
Average of All Observations	.94	.67	.74	.86	.66

APPENDIX C: TREND DATA TABLES
(Food Stamp and Non-Food Stamp Data)

	Percentage of Home-makers Reporting Minimum Diets on Food Recall #1		Percentage of Home-makers Reporting Minimum Diets After 24 Months of Program Participation		Percentage of Home-makers Reporting Adequate Diets on Food Recall #1		Percentage of Home-makers Reporting Adequate Diets After 24 Months of Program Participation		Percentage of Home-makers Reporting No Servings of Milk At Program Entry	
	FIGURE 2		FIGURE 3		FIGURE 4		FIGURE 5		FIGURE 6	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	54.5	55.0	78.5	76.0	5.7	6.7	22.9	22.9	32.7	33.0
September 1977	48.8	53.1	78.5	75.2	4.8	6.0	23.3	23.4	35.9	34.7
March 1978	50.2	53.0	76.4	77.2	3.6	4.5	21.2	20.7	36.3	36.6
Avg. of All Three	51.2	53.7	77.8	76.1	4.7	5.7	22.4	22.3	35.0	34.8

	Percentage of Home-makers Reporting No Servings of Meat At Program Entry		Percentage of Home-makers Reporting No Servings of Vegetables and Fruits At Program Entry		Percentage of Home-makers Reporting No Servings of Breads and Cereals At Program Entry		Percentage of Home-makers Reporting No Servings of Milk After 24 Months of Program Participation		Percentage of Home-makers Reporting No Servings of Meat After 24 Months of Program Participation	
	FIGURE 7		FIGURE 8		FIGURE 9		FIGURE 10		FIGURE 11	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	4.3	4.0	14.1	11.5	3.4	3.0	13.7	13.2	0.8	0.9
September 1977	4.7	4.2	16.2	11.4	4.2	3.6	13.2	13.8	0.9	0.7
March 1978	4.2	4.0	16.5	12.1	4.1	3.0	16.5	16.5	1.3	1.2
Avg. of All Three	4.4	4.1	15.6	11.7	3.9	3.2	14.5	14.5	1.0	0.9

	Percentage of Home-makers Reporting No Servings of Vegetables and Fruits After 24 Months of Program Participation		Percentage of Home-makers Reporting No Servings of Breads and Cereals After 24 Months of Program Participation		Percentage of Home-makers Reporting 2 or More Servings of Milk at Program Entry		Percentage of Home-makers Reporting 2 or More Servings of Meat at Program Entry		Percentage of Home-makers Reporting 4 or More Servings of Vegetables and Fruits at Program Entry	
	FIGURE 12		FIGURE 13		FIGURE 14		FIGURE 15		FIGURE 16	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	3.3	2.0	0.4	0.2	31.3	31.1	70.6	72.5	15.7	22.2
September 1977	2.7	1.6	0.6	0.3	27.8	28.8	69.9	68.9	15.8	20.9
March 1978	3.0	2.7	1.9	0.6	27.5	28.0	69.3	72.4	14.3	17.7
Avg. of All Three	3.0	2.1	1.0	0.4	28.9	29.3	69.9	71.2	15.3	20.3

	Percentage of Homemakers Reporting 4 or More Servings of Breads and Cereals at Program Entry		Percentage of Homemakers Reporting 2 or More Servings of Milk After 24 Months of Program Participation		Percentage of Homemakers Reporting 2 or More Servings of Meat After 24 Months of Program Participation		Percentage of Homemakers Reporting 4 or More Servings of Vegetables and Fruits After 24 Months of Program Participation		Percentage of Homemakers Reporting 4 or More Servings of Breads and Cereals After 24 Months of Program Participation	
	FIGURE 17		FIGURE 18		FIGURE 19		FIGURE 20		FIGURE 21	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	39.7	42.7	54.7	53.0	85.0	84.8	39.7	46.2	59.5	58.6
September 1977	37.8	40.7	54.8	53.2	87.7	83.1	43.3	48.7	63.2	65.4
March 1978	39.8	41.9	50.7	45.7	84.4	86.1	37.4	41.7	59.6	59.9
Avg. of All Three	39.1	41.8	53.4	50.6	85.7	84.7	40.1	45.5	60.8	61.3

	Percentage of Difference Between the Percentage of Program Homemakers Reporting Minimum Diets at Program Entry and Percentage of Program Homemakers Reporting Minimum Diets After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Diets at Program Entry and Percentage of Program Homemakers Reporting Adequate Diets After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting No Milk Servings at Program Entry and Percentage of Program Homemakers Reporting No Milk Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting No Meat Servings at Program Entry and Percentage of Program Homemakers Reporting No Meat Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting No Vegetable and Fruit Servings at Program Entry and Percentage of Program Homemakers Reporting No Vegetable and Fruit Servings After 24 Months of Program Participation	
	FIGURE 22		FIGURE 23		FIGURE 24		FIGURE 25		FIGURE 26	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	44.0	38.2	301.8	241.8	-58.1	-60.0	-81.4	-77.5	-76.6	-82.6
September 1977	60.9	41.6	385.4	290.0	-63.2	-60.2	-80.9	-83.3	-83.3	-86.0
March 1978	52.2	45.5	488.9	360.0	-54.5	-54.9	-69.0	-70.0	-81.8	-77.7
Avg. of All Three	52.4	41.8	392.0	297.3	-58.6	-58.4	-77.1	-76.9	-80.6	-82.1

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	Percentage of Difference Between the Percentage of Program Homemakers Reporting No Bread and Cereal Servings at Program Entry and Percentage of Program Homemakers Reporting No Bread and Cereal Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Milk Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Milk Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Meat Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Meat Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Vegetable and Fruit Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Vegetable and Fruit Servings After 24 Months of Program Participation		Percentage of Difference Between the Percentage of Program Homemakers Reporting Adequate Bread and Cereal Servings at Program Entry and Percentage of Program Homemakers Reporting Adequate Bread and Cereal Servings After 24 Months of Program Participation	
	FIGURE 27		FIGURE 28		FIGURE 29		FIGURE 30		FIGURE 31	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	-88.2	-93.3	74.8	70.4	20.4	17.0	152.9	108.1	49.9	37.2
September 1977	-85.7	-91.7	97.1	84.7	25.5	20.6	174.1	133.0	66.7	60.7
March 1978	-53.7	-80.0	84.4	63.2	21.8	18.9	161.5	135.6	49.7	43.0
Avg. of All Three	-75.9	-88.3	85.4	72.8	22.6	18.8	162.8	125.6	55.4	47.0

	Average Program Family Size		Family Income in Current Dollars		Family Income in Constant (1957-1959) Dollars		Program Family Food Expenditure in Current Dollars		Program Family Food Expenditures in Constant (1957-1959) Dollars	
	FIGURE 33		FIGURE 36		FIGURE 37		FIGURE 38		FIGURE 39	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	4.40	3.77	277	374	134.07	181.02	95	129	45.98	62.43
September 1977	4.41	3.77	282	390	131.69	182.13	98	138	45.77	64.45
March 1978	4.32	3.73	289	407	130.92	184.37	107	140	48.47	63.42
Avg. of All Three	4.38	3.76	283	390	132.23	182.51	100	136	46.74	63.43

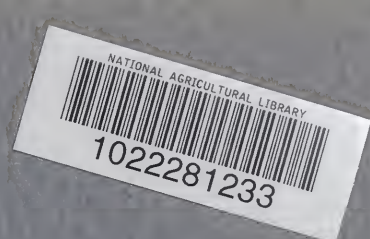
	Percentage of Program Family Members Under 19 Years of Age		Percentage of Program Family School Children in School Lunch Programs		Percentage of Program Family Children in School		Percentage of Families Residing in Urban Areas		Percentage of Program Families Worked With Individually	
	FIGURE 42		FIGURE 43		FIGURE 44		FIGURE 45		FIGURE 46	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	60.92	50.35	90.49	83.44	70.67	67.34	61.45	57.96	70.09	64.15
September 1977	60.81	50.88	91.97	82.37	69.48	67.00	62.71	56.28	72.48	66.43
March 1978	61.94	50.58	91.95	81.20	68.61	65.59	59.87	55.65	74.36	68.65
Avg. of All Three	61.22	50.60	91.47	82.34	69.59	66.64	61.34	56.63	72.30	66.41

	Percentage of Program Families Worked with in Groups		Percentage of Program Families Worked with Both Individually and in Groups		Percentage of Program Families Receiving Welfare		Percentage of Program Homemakers Under 24 Years of Age		Percentage of Program Homemakers 25 - 55 Years of Age	
	FIGURE 47		FIGURE 48		FIGURE 49		FIGURE 50		FIGURE 51	
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	9.42	15.08	5.30	5.32	59.76	10.47	21.01	21.72	64.15	57.43
September 1977	7.38	10.18	4.57	4.38	60.41	10.36	21.21	21.88	66.07	59.31
March 1978	8.38	14.20	4.21	3.99	59.84	8.22	21.41	22.40	65.89	59.45
Avg. of All Three	8.39	13.15	4.69	4.56	60.03	9.66	21.21	22.00	65.40	58.73

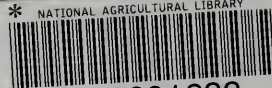
	Percentage of Program Homemakers Older Than 55 Years of Age		Percentage of Participating Program Homemakers with an Eighth Grade Education or Less		Percentage of Program Families Receiving FHA Assistance					
	FIGURE 52		FIGURE 53		FIGURE 66					
	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977	14.72	20.73	45.11	37.78	3.95	2.72				
September 1977	12.57	18.66	46.01	36.11	3.23	3.07				
March 1978	12.56	17.99	44.30	34.26	3.52	2.50				
Avg. of All Three	13.28	19.13	45.14	36.05	3.57	2.76				

	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977										
September 1977										
March 1978										
Avg. of All Three										

	FS	NFS	FS	NFS	FS	NFS	FS	NFS	FS	NFS
March 1977										
September 1977										
March 1978										
Avg. of All Three										



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